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Issue 48 £1.95

February/March

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'The magazine for the Dedicated Atari User'

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ST FILE

SNAKES & LADDERS
The classic board game in machine code

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SUBMISSIONS

PAGE 6 welcomes and encourages its readers to submit, articles, programs and reviews for publication. Programs must be submitted on disk or cassette, articles should wherever possible be submitted as text files on disk. We seek to encourage your participation and do not have strict rules for submissions. If something interests you, write a program or article and submit it! Appropriate payment will be made for all published programs and articles, all payments being made at the end of the second month shown on the cover of the issue concerned.

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PAGE 6 PUBLISHING's
NEW
ATARI
USER

Editorial

Issue 48
February/March 1991

'The Magazine for the Dedicated Atari User'

ISSN No. 0958-7705

THE CREDITS

All of the usual stuff is on page 3 but here are the people who made this issue possible.

Les Ellingham didn't have time to get any Christmas presents since the two weeks before Christmas and even Christmas Eve were spent doing all the editing, typesetting, photography and paste-up necessary to get this one on the road.

Sandy did the advertising and worked hard in getting all the readers' Christmas presents sent off in time but the embroidery went for a burton.

Stacey just got more and more excited as Christmas got closer and worked hard apart from the day when she claimed the snow was up to her bedroom window! She's now hoping that Mickey Mouse will send her a New Year present.

The Regular Contributors, who provide the backbone of the magazine and can generally be relied upon to come up with good articles and reviews, are ....

Mark Hutchinson — **John S Davison**
John Davison jr — **John Sweeney**
Paul Rixon — **Damon Howarth**
Ian Finlayson — **Peter Hickman**
N.B. The Tipster also contributes

All other contributors for this issue are individually credited alongside their articles or programs. Thanks to everybody for sharing their enthusiasm with other Atari users.

The cover is our main game **SNAKES & LADDERS** by **Kevin Harper**, a program that we have had for over two years which proves that everyone still has a chance of getting their games published.

The inspiration this time came from the usual diverse sources including lots of Christmas music from The Roches (excellent 'straight' carols and Crimble songs), a fine album from Judy Collins, a great compilation from Peter Gabriel, an album of love songs by Finbar Furey that most people will hate(!) and Sinead O'Connor (alright a bit late but sometimes one great song prompts a listen to an album previously dismissed). Anyone else? Well, how about Van Morrison (surprise, surprise)? Another excellent album - try the weird 'In the Days Before Rock and Roll', almost like Ivor Cutler but not really, nothing is quite like Mr. Cutler!

NEW ATARI USER is the magazine, PAGE 6 is the concept. Wherever you see PAGE 6 you'll know what it means!

The next issue of NEW ATARI USER could feature YOUR article or program, so SEND IT IN NOW!

PAGE 6 shows just what you can do with your Atari. With the exception of final output on a Linotron and use of a repro camera for the listings and photos, the magazine is prepared entirely with Atari based equipment and software - not a Macintosh or IBM in sight! Hardware used includes 130XE, 1050 disk drive, 810 disk drive, 410 cassette (occasionally!), 850 Interface, NEC 8023 printer, 1040ST, SM124 Monitor, Atari SH204 hard disk drive, Cumana 1 meg disk drive, Epson RX100 printer, Kyocera laser printer, Microstuffer printer buffer. Software includes Superscript, Turbo Basic, Kermit, PC Intercomm, TARI-TALK, Print Wiz, STWriter, Protext and Fleet Street Publisher.
Articles and programs submitted on XL/XE disks are subjected to various custom written programs before being transferred across to the ST via TARI-TALK. All major editing is done with Protext and pages are laid out with Fleet Street Publisher. A disk with the finished pages is sent up to a typesetting bureau to be output on a Linotron 300 and, hey presto, finished pages are sent back. It really does work - at last! All that is left is to drop in the listings and photos. Well, it's not quite as easy as that, but you get the idea!

A BETTER CHOICE?

A strange thing seems to happening at the moment. As the number of companies supporting the XL/XE gets smaller so the choice of software and other items available seems to be getting bigger! In fact you can now obtain software for your Atari which has never before been available in this country or which has not been sold here for many years. An added benefit is that most of this software is being offered at a fraction of its original price.

You will have noticed that the number of companies supporting the 8-bit Atari can now be almost counted on one hand but if you check the adverts you will find a huge variety of goodies to feed to your computer. Gralin International have this issue brought in a lot of software from Antic magazine in the States none of which, to our knowledge, has been easily available before from a UK company and their catalogue is full of the more serious items from companies like ICD and Alpha Systems. As an aside several readers have been suspicious of Gralin because they do not show a telephone number in their advertisements. The company is actually run by a couple of guys from the Bournemouth and Poole User Group who we have known for many years and who have provided support for the 8-bit at all of the Atari Shows in recent years and we have no reason to believe they are anything but trustworthy. The telephone situation is rather silly and we are continually pressing them to have, at least, an answering machine installed. I believe that telephone contact is essential even if only as a 'last resort' back up. Someone who does it the other way round and gives a telephone number but no address is Derek Fern who has managed to find some incredible hardware bargains in recent months and is now digging up some software that is otherwise impossible to find. Derek is now virtually the only source for hardware and items such as the AtariWriter word processor. Incidentally, Derek should now have available Atariwriter on cassette (for the first time ever) which, with the Rambo high speed loader supplied will load in just 54 seconds. It is incredible to think that after all these years a top class word processor is now available on cassette for the first time.

Another enthusiast who wants to keep support of the 8-bit going is Bill Sutton who runs the user group XL/XE ALIVE. Bill has bought up a lot of software from Callisto and others and you will find an advertisement in this issue. If you want to keep the Atari 8-bit alive then check out his advertisement and buy something or send for his full lists. Those of you who complain that there is not much software available should check out Miles Better Software who have an enormous number of titles in their adverts. Sure very little is 'new release' material but there is a great variety and you surely can't have every one of those titles can you?

We are also doing our bit as well with all those ROMs from Atari and some recently discovered books that we can sell at ridiculously low prices. In a rather perverse way you have never had it so good. All it needs now is for the thousands on your side to support the handful on this side and that way the Atari 8-bit will survive for a long, long time.

STILL NO DISK DRIVES

The negative side at the moment is the continuing non-availability of disk drives. Derek Fern has a handful but it needs someone to produce an interface to allow a standard disk drive to be used (and it can be done, can't it Derek?) and be available in large numbers. Much of the software mentioned above is available on disk only and if the disk drive supply situation is not rectified then all the efforts to support the 8-bit will come to nought as folks will simply sell up or give up. We will market an independent drive and do all the advertising if someone can come up with the hardware at a reasonable price. How about it someone?

Les Ellingham

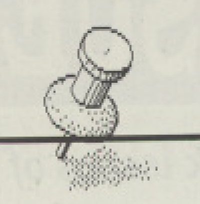
COMING NEXT ISSUE

SOFTWARE FOR THE LYNX ...

At last there are a few more cartridges available for the ultimate hand-held machine. We bring you reviews of XENOPHOBE, ROAD BLASTERS, MS PACMAN, KLAX, ZALOR MERCENARY and SLIME WORLD. That lot should keep your palms sweaty for a while!

Mailbag





Must remember to write to Mailbag

P.O. Box 54
Stafford
ST16 1DR

MIXING THEM UP

I am having problems in typing in your two part listings such as Mouse Party, Skirmish, Greenfingers and others. I type in Listing 1 and save it to disk then I type in Listing 2 and I find that it goes into Listing 1 so I cannot run them. I have tried turning the computer off then loading Listing 1 but it still does not work.

E. Hendrie,
Edmonton

The listings in question are two separate listings and should not be combined. After typing the first listing and saving it you should clear it from memory by typing NEW and pressing Return or by switching you machine on and off. Then type in Listing 2 and save it as a totally separate listing. In the case of the programs you have mentioned you then LOAD listing 1 (which will automatically delete any other program in memory) and run this to create yet another program on disk. You then LOAD listing 2 (thus deleting listing 1) and run it. This then runs the new program you have created on disk. Sounds a bit complicated but it's not. Just remember that, unless the article contains specific instructions to the contrary, all listings in the magazine are separate programs and should be typed in separately with any previous listing cleared from memory first.

GOLF

I've just become interested in Golf so I was thinking of buying a golf game. Please could you give me a list of all golf games on disk and also state the prices. Which game would you advise me on? I like games with good graphics and an addictive gameplay. I was also wondering about Matchplay Golf. Does it need Pro Golf to run or is it a single game? And is it any good?

James Haworth,
Oadby

What do you mean is one of our Bonus games any good! Of course it is, it's brilliant! Seriously, both Matchplay Golf and Pro Golf are excellent games with decent graphics and will provide you with many hours play. They are separate games and for a mere £2.95 you can't go wrong. There have been very few golf games on the 8-bit but we would strongly recommend Leaderboard if you can find it which is top notch, especially the graphics which give you a behind the golfer perspective. You can also buy a 'Tournament' disk which gives you extra courses. See if you can find a copy, you won't be disappointed.

PRINTER CONNECTION

Would it be possible to connect my 130XE to a Star LC10 printer. I know you can buy an interface already built but they are rather expensive. Would I be able to construct my own? Could you please give me the pinouts if possible. I used the LC10 on my STFM but alas my STFM has bit the dust and as I have acquired the 130XE it seemed a shame not to join them together.

J.J. Davies,
Thornton Heath

Yes, you can connect the LC10 to your 130XE but not without an interface. The ST has RS232 and Centronics interfaces built in but with the XL/XE, Atari provided these interfaces only as an external add-on in the form of the 850 interface. Originally it was not felt that a home computer would need such interfaces which would increase the cost of the machine considerably (this was the days when an Atari 800 cost £645!) but when it became apparent that people wanted to add printers and modems Atari produced the 850. Having made millions of these they were not about to add interfaces to the later XE models although they could have done quite easily and cheaply. The simplest way to add a printer is to buy an interface cable but you can build your own interface. Derek Fern has developed several internal interfaces and can supply these in kit form or ready built - check his advert in this issue. Unfortunately you can't just make a cable to connect the printer, would that it were that easy!

OOPS TYPO

Having made all the changes to TYPO 3 as printed in Issue 47, then checking all the two letter codes and making several copies to be on the safe side I ran the program to be greeted with 'TYPO III is up and running'. Great so far. I typed a few lines of a program and pressed the RESET key and it locked up. Nothing I could do would make the program respond. What's wrong, I thought it was now supposed to be reset proof?

K. Edwards,
Runcorn

I have a 65XE and XC12 data recorder and find that the TYPO 3 listing in its present format will not work. The problem is that when System Reset is pressed the machine locks up and any listing being typed is lost forever.

The fix to this problem is to change line 135 to read:
135 POKE 9,2:POKE 2,1:POKE 3,6
which will now allow the program to run normally.

G. Sumner
Preston

Apologies to everyone who had problems. Our fault for not testing the routine out on a cassette only system. We did check that it worked when loaded from cassette but we had a disk drive hooked up at the same time and with this combination it worked okay.

AN ANSWER

I write in connection with the letter in Issue 47 enquiring about a game which involves 'docking' between levels. The game in question is called SPACE EGGS and is available from The Atari Centre, Broad Street, Birmingham. I cannot remember the price but I believe it was under £15.

M. Stinson
Ashby, Leics.

Thanks for the info. Someone else wrote to say that the game was GALAGA but didn't know if an Atari version had been written. We can't remember either but if it was it disappeared many years ago.

INTERFERENCE

I read an article in a newspaper recently that forecast potential problems with the proposed Channel 5 TV station. As I understand it Channel 5 has been allocated frequencies 35 and 37 and will use both channels simultaneously for sound and vision. There may well be some 'bleed over' into channel 36 which is the channel used by the XL and XE when connected to a TV. A spokesman for the authorities played down any problems but as an old cynic I've heard assurances like that before.

Can anyone tell me whether there is likely to be any problem and whether there is any possibility of re-tuning my 8-bit to a different frequency?

K. L. Laidlaw
Hinckley

This could be quite serious. Imagine being up to level 115 of the latest blast 'em, just about to go into the final megaphase and being interrupted by Neighbours! Still, if they make it interactive you could always blast Jason Donovan instead! This one needs some feedback from some of the Atari owning TV engineers out there. Anyone got any comment?

SOUNDING OFF

I am the proud owner of an 800XL which has a great sound chip (POKEY) but why doesn't anyone use its filters and timing registers? Is there any info out there to explain them. I listen to sound through my Hi-Fi and it sounds great but when I load up a game the sound dies and turns into blips and blops. Yuk! Is there any software that explains the use of the POKEY chip in detail like filters, smooth sweeping, timing registers and so forth?

Peter Adamcik,
Frankston, Australia

I have never understood why so few people have taken advantage of the XL's 16-bit sound capabilities. We published an article and program in Issue 31 which touched on it and I seem to remember that there was a book at one time that had a chapter devoted to this subject. I think it was The 600XL Handbook. Most of the book was pretty disposable but the section on sound was excellent giving all the details you mentioned. Perhaps someone could dig it out and write us an article, maybe even the author could give us permission to republish it as I believe that the book is now long out of print.

PROBLEMS ...

I have an 800XL with a US Doubler. Can you help with the following:
1. I can't seem to make a working copy of Mini Office
2. I have DOS 2.5, SpartaDos 2.3 and Copymate 4.3. Part of Mini Office will copy but not all. What am I doing wrong?
2. Who sells the hardware PC DITTO 2 for the ST?
3. How do you interface or cable the 800XL to an Amstrad GT-65 Monochrome VDU which is RGB?
4. Is there any way to output 8-bit files from Textpro and Mini Office 2 into an ST?
5. Same question as above, I can't seem to be able to make a working copy of Textpro.
I am sure that I am the weak link. I believe that I am the only Atari 8-bit type up here in Derry. There is nobody to talk to as the Atari never caught on up here.

Dave Tierney
Londonderry

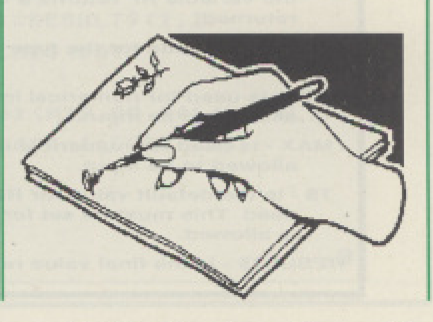
You might have some problems copying Mini Office 2 since we believe there are a couple of bad sectors on the disk designed to stop people making pirate copies. We had all our copies of Mini Office 2 professionally duplicated which retains such 'protection'. You should have no problems in using Mini Office without backing it up, just make sure that you always keep it write protected and always use a separate disk for your data. As regards Textpro, there is no reason why you cannot copy it with Copymate since this is what we use to duplicate this disk. The only problem you may have is if your particular disk has a bad sector. PC DITTO is, we believe, no longer available since the company producing it has, apparently, fled their offices without a forwarding address. You might find a retailer somewhere with some stock but it would not be wise to buy since there will be no backup. As far as the Amstrad monitor goes I'm afraid you'll have to give up since you can't connect an RGB monitor to the 8-bit which has only composite video output. Finally, transferring 8-bit files to the ST is easy with TARI-TALK (from Page 6). If you do have an 850 interface or P:R: Connectionan then you can transfer files using a null modem cable and suitable comms software on each machine. We use Kermit which is available on both machines in the public domain.

CONFUSED

I am 11 years old and I have had the New Atari User magazine since April 1990 and I have noticed that nearly all the type in programs that are for the XL/XE involve putting inverted commas into the lines of the program. I cannot do this since my 65XE has to have inverted commas to show I've started and another pair to show I've finished i.e. 10 ? "the line". The computer thinks that when the commas appear in that line it should stop the line to move on to another line. Please help me to find another way to type your brill programs into my computer.

Lee Birch
Northampton

We'd love to help Lee, but confess to being totally confused. You can type all of the listings in New Atari User exactly as they are printed without any problem on a 65XE. Either you are doing something that you shouldn't or your machine is faulty. Has anyone had any similar problems or can anyone figure out what Lee is doing wrong?



GETKEY

by L.C. Jeffs

Virtually every time I wrote an application I found that when I needed to input data the INPUT and GET commands did not do the job as I required. Without the use of TRAP and/or extensive post RETURN checks unwanted data still slipped by. I found I needed to be able to input data and check it character by character to ensure that it was within the parameters I required.

With these requirements in mind I set out to write a Basic routine to do this. I soon became aware that an all embracing routine would be far too large and so a compromise was made I chose to have six different basic types of input, the alphabetical ones divided into three sub-types and the 2 numerical ones capable of up to 9 decimal places. These are shown in Table 2.

THE LISTINGS

GETKEY.DMO is the demonstration routine to show how GETKEY works, it uses the main routine itself for you to enter the parameters you require.

GETKEY.L01 is the main routine. It starts at line 100 as being a frequently used routine Basic can find it quicker in the lower numbers. The GETKEY.L01 routine takes up 3746 bytes of memory (just over 3.5K) but selective deletion of unused sections would of course reduce this.

THE PARAMETERS

The parameters will be set by the programmer and it is up to him/her to ensure that they do not clash, i.e. if MAXLEN is set to 20 and X is greater than 19 then the field will extend beyond the cursors range and cause an error.

It is possible for the program to work out some of the parameters as does the demo routine for MAXLEN, MIN and MAX, but this can become a little complex. Table 1 describes the parameters, T$ should be set to whatever value is required if a CURSOR key is used to skip out of a field. T$ should be padded with blanks or zeros to the length of the field required. RESULT$ is built up by your input and is kept when RETURN is pressed, it is already padded with blanks or zeros. If a CURSOR key is pressed then T$ is transferred into RESULT$. The rest of the parameters are fairly self explanatory using Table 1 to see what they do.

TABLE 1
GETKEY PARAMETERS

X - is the X co-ordinate of the field, i.e. the position along the line (starting at zero) that the first character will be printed. One space must be allowed at each end of the field.

Y - is the Y co-ordinate of the field, i.e. the number of lines down the screen (starting at zero) that the field will print. If Y = 23 then X plus MAXLEN must not exceed 37.

MAXLEN - is the maximum length the field can be. For numeric fields this must include the sign and decimal point if any. Numeric data is only accurate up to 10 digits.

CURS - is a code to allow cursor keys to be used, see Table 3 for values. When CURSOR movement is allowed and used the variable RF returns a value, see Table 4 for values returned.

TYPE - is a code for the type of input, see Table 2 for explanation.

MIN - is used for numerical input and gives the minimum value allowed to be input.

MAX - is used for numerical input and gives the maximum value allowed to be input.

T$ - is the default value for RESULT$ when a CURSOR key is used. This must be set for any field where cursor movement is allowed.

RESULT$ - is the final value returned from the GETKEY routine.

TO USE GETKEY

You are required to set the screen up and must allow one character each side of each field for the chevron markers.

If you keep a channel open to the keyboard and are using ATARI BASIC remove lines 84,86,108 and 128, and alter lines 85 and 117 to reflect your open channel.

Set the parameters for each field that you require just before calling GOSUB 100 and move RESULT$ into your own variable upon RETURN (use VAL(RESULT$) for number fields).

If cursor movement was allowed check RF for the values of 1 to 4 for direction and branch your routine accordingly. RF is 5 when return is pressed.

SEPARATING THE LISTINGS

At the end of the listing from lines 2000 onwards are some helpful command lines to print, save, and separately list the routines to Drive 1. Use GOTO in direct mode using the appropriate line number as follows:-

2010 Lists a copy of the whole routine to the printer. The second LPRINT statement forces a page eject from an EPSON printer, replace this if your printer uses a different control character.

2011 Saves a copy of the whole routine to Drive 1 as a backup copy named 'GETKEY.BAK'.

2012 Saves a copy of the whole routine to Drive 1 named 'GETKEY'.

2013 Lists the main routine to Drive 1 named 'GETKEY.L01'. This is the routine you will need to ENTER into your own routine. Ensure you do not use lines 100 to 205 and that you include in your routine a DIMension for T$(38) and RESULT$(38).

2014 Lists the DEMO routine to Drive 1 named 'GETKEY.DMO'.

2015 Lists the trailer routine to Drive 1 named 'GETKEY.TLR'.

Whatever line you goto will perform that and all following lines, so if for example you do not want to save a listing of the trailer delete or REM out line 2015 before you GOTO.

If you are a cassette based Atarian then change the filenames to "C:" and the SAVE's to CSAVE. You will then be required to press return before each line is executed.

GETKEY


```
WO 1 REM ******************************
YZ 2 REM *       GETKEY V. 2.0        *
RU 3 REM *         Listing 1          *
FS 4 REM *       by L.C. JEFFS        *
SR 5 REM * -------------------------- *
CG 6 REM *  NEW ATARI USER - JAN '91  *
WU 7 REM ******************************
NN 8 REM
PY 108 OPEN #1,4,0,"K:"
XR 109 D=TYPE-INT(TYPE/10)*10:T=INT(TYPE/
   10):RESULT$="":A=1:IF MAXLEN=1 THEN A=
   0
RB 110 IF T<5 THEN RESULT$(1,1)=" ":RESUL
   T$(MAXLEN-A,MAXLEN-A)=" ":RESULT$(A+1)
   =RESULT$:GOTO 114
AQ 111 RESULT$(1,1)="0":RESULT$(MAXLEN-A,
   MAXLEN-A)="0":RESULT$(A+1)=RESULT$:I=M
   AXLEN-D
PK 112 IF D>0 THEN RESULT$(MAXLEN-D,MAXLE
   N-D)=".":I=I-1
EH 113 IF T=6 THEN RESULT$(1,1)="+":I=I-1
BX 114 DAT=0:A=0:RF=0:DF=0:POSITION X-1,Y
   :? ">";RESULT$;"<";
IS 115 IF A<0 THEN A=0
NO 116 TRAP 125
DR 117 GET #1,DAT
JQ 118 TRAP 40000
SO 119 A=A+1:IF A=1 AND DAT=126 THEN A=0:
   ? "◙";:GOTO 126
NA 120 IF A>MAXLEN AND DAT<>126 AND DAT<>
   155 AND DAT<>43 AND DAT<>45 AND (DAT<2
   8 OR DAT>31) THEN ? "◙";:A=A-1:GOTO 12
   6
IR 121 IF T<5 THEN GOSUB 130:GOTO 123
XQ 122 GOSUB 168
UL 123 POSITION X,Y:? RESULT$;
PM 124 GOTO 126
IG 125 POSITION X+MAXLEN,Y:? "◙";
VS 126 IF RF=0 THEN 115
LG 127 POSITION X-1,Y:? " ";:POSITION X+M
   AXLEN,Y:? " ";
LZ 128 CLOSE #1
AC 129 RETURN
CH 130 REM CHARS
CJ 131 IF DAT=155 THEN RF=5:GOTO 167
KQ 132 IF DAT=126 AND A>1 THEN RESULT$(A-
   1,A-1)=" ":A=A-2:GOTO 167
PD 133 IF DAT>27 AND DAT<32 THEN 135
RJ 134 GOTO 139
DF 135 IF ((CURS=1 OR CURS=3) AND (DAT>27
    AND DAT<30)) OR ((CURS=2 OR CURS=3) A
   ND (DAT>29 AND DAT<32)) THEN 137
RD 136 GOTO 138
VI 137 RF=DAT-27:POSITION X-1,Y:? " ";T$;
   " ";:RESULT$=T$:GOTO 167
HC 138 ? "◙";:GOTO 167
CD 139 ON T GOTO 140,145,152,159
SN 140 ON D GOTO 141,143,166
UZ 141 IF (DAT>64 AND DAT<91) OR (DAT>192
    AND DAT<219) THEN 165
RC 142 GOTO 166
ZF 143 IF (DAT>96 AND DAT<123) OR (DAT<22
   4 AND DAT<251) THEN 165
RI 144 GOTO 166
TS 145 ON D GOTO 146,148,150
QU 146 IF (DAT>31 AND DAT<65) OR (DAT>90
   AND DAT<123) THEN 166
RF 147 GOTO 165
BF 148 IF DAT>31 AND DAT<96 THEN 166
RL 149 GOTO 165
CL 150 IF (DAT>31 AND DAT<96) OR (DAT>96
   AND DAT<123) THEN 166
QP 151 GOTO 165
XE 152 ON D GOTO 153,155,157
XF 153 IF (DAT>31 AND DAT<48) OR (DAT>57
   AND DAT<65) OR (DAT>90 AND DAT<96) OR
   (DAT>96 AND DAT<123) THEN 166
QY 154 GOTO 165
AY 155 IF DAT>31 AND DAT<96 THEN 166
RE 156 GOTO 165
DG 157 IF (DAT>31 AND DAT<96) OR (DAT>96
   AND DAT<123) THEN 166
RK 158 GOTO 165
TA 159 ON D GOTO 160,162,164
MD 160 IF DAT>96 AND DAT<123 THEN 166
QR 161 GOTO 165
XV 162 IF (DAT>64 AND DAT<48) OR (DAT>57
   AND DAT<91) THEN 166
QX 163 GOTO 165
BH 164 IF (DAT>64 AND DAT<91) OR (DAT>96
   AND DAT<123) THEN 166
AP 165 ? "◙";:A=A-1:GOTO 167
JL 166 RESULT$(A,A)=CHR$(DAT)
AE 167 RETURN
CH 168 REM NUMS
JK 169 IF DAT=155 THEN 202
YQ 170 IF ((CURS=1 OR CURS=3) AND (DAT>27
    AND DAT<30)) OR ((CURS=2 OR CURS=3) A
   ND (DAT>29 AND DAT<32)) THEN 172
QG 171 GOTO 173
CD 172 RF=DAT-27:POSITION X-1,Y:? " ";T$;
   " ";:RESULT$=T$:GOTO 204
LU 173 IF I<1 THEN DF=1:A=MAXLEN-D
VZ 174 IF DF=0 AND DAT=46 AND D>0 THEN DF
   =1:A=MAXLEN-D:GOTO 204
VQ 175 IF T=6 AND A=1 THEN A=2
WB 176 IF T=6 AND (DAT=43 OR DAT=45) THEN
    RESULT$(1,1)=CHR$(DAT):A=A-1:GOTO 204
IT 177 IF (DAT<48 OR DAT>57) AND DAT<>126
    THEN ? "◙";:A=A-1:GOTO 204
FN 178 IF A=1 AND DAT=126 THEN ? "◙";:A=0
   :GOTO 204
XG 179 IF DF=0 THEN 185
NN 180 IF DAT=126 THEN 182
RF 181 GOTO 184
KP 182 IF A=I+T-3 THEN DF=0:A=A-1:GOTO 18
   8
XE 183 A=A-2:RESULT$(A+1,A+1)="0":GOTO 20
   4
KX 184 RESULT$(A,A)=CHR$(DAT):GOTO 204
SN 185 IF DAT=126 THEN 187
QV 186 GOTO 191
CN 187 IF T=6 AND A=2 THEN RESULT$(1,1)="
   ":A=A-2:GOTO 204
NB 188 IF I>1 THEN FOR DAT=I+T-5 TO T-3 S
   TEP -1:RESULT$(DAT,DAT)=RESULT$(DAT-1,
   DAT-1):NEXT DAT
XA 189 RESULT$(T-4,T-4)="0"
RY 190 A=A-2:GOTO 204
JL 191 IF (T=5 AND A>I) OR (T=6 AND A>I+1
   ) THEN ? "◙";:A=A-1:GOTO 204
HE 192 IF T=6 THEN 194
TU 193 GOTO 198
DO 194 IF I=1 THEN 196
GL 195 RESULT$(2,I)=RESULT$(3,I+1)
LJ 196 RESULT$(I+1,I+1)=CHR$(DAT)
OZ 197 GOTO 204
UB 198 IF I=1 THEN 200
YA 199 RESULT$(1,I-1)=RESULT$(2,I)
QY 200 RESULT$(I,I)=CHR$(DAT)
NQ 201 GOTO 204
VT 202 IF VAL(RESULT$)<MIN OR VAL(RESULT$
   )>MAX THEN ? "◙";:A=A-1:GOTO 204
DC 203 RF=5
ZK 204 RETURN
OG 205 END
```

GETKEY


```
WO  1 REM ********************************
YZ  2 REM *        GETKEY V. 2.0         *
KR  3 REM *        Demonstration         *
F5  4 REM *        by L.C. JEFFS         *
5R  5 REM * ---------------------------- *
CG  6 REM *  NEW ATARI USER - JAN '91    *
WU  7 REM ********************************
NN  8 REM
ZR 10 DIM T$(38),RESULT$(38)
OC 11 X1=10:Y1=16:MAXLEN1=10:MIN1=10:MAX1
   =1999999:CURS1=0:TYPE1=52
UL 12 ? "K":POKE 752,0
XD 13 POSITION 14,1:? "GETKEY DEMO"
KY 14 POSITION 2,3:? "X CO-ORDINATE
   Y CO-ORDINATE"
XH 15 POSITION 2,5:? "MAXLEN
   TYPE"
GL 16 POSITION 0,10:? "==================
   ======================"
YS 17 X=17:Y=3:MAXLEN=2:MIN=1:MAX=37:CURS
   =3:TYPE=50:T$=STR$(X1)
RZ 18 GOSUB 107
RD 19 X1=VAL(RESULT$)
SJ 20 IF RF=1 THEN 40
XB 21 IF RF=2 THEN 28
ZN 22 X=36:Y=3:MAXLEN=2:MIN=11:MAX=22:CUR
   S=3:TYPE=50:T$=STR$(Y1)
RQ 23 GOSUB 107
QY 24 Y1=VAL(RESULT$)
ZV 25 IF RF=3 OR RF=4 THEN 17
XQ 26 IF RF=1 THEN 56
US 27 IF RF=2 THEN 33
PD 28 X=10:Y=5:MAXLEN=LEN(STR$(39-X1)):MI
   N=1:MAX=39-X1:CURS=3:TYPE=50:T$=STR$(M
   AXLEN1)
SC 29 GOSUB 107
JT 30 MAXLEN1=VAL(RESULT$)
SW 31 IF RF=2 THEN 40
VL 32 IF RF=1 THEN 17
ZK 33 X=27:Y=5:MAXLEN=2:MIN=11:MAX=69:CUR
   S=3:TYPE=50:T$=STR$(TYPE1)
RT 34 GOSUB 107
WC 35 TYPE1=VAL(RESULT$)
MR 36 IF TYPE1<50 THEN POSITION 2,7:? "
                                        "
BZ 37 IF RF=3 OR RF=4 THEN 28
TC 38 IF RF=1 THEN 22
QU 39 IF RF=2 AND TYPE1>49 THEN 56
GZ 40 IF TYPE1<50 THEN 71
XE 41 POSITION 2,7:? "MIN
   "
CJ 42 T$="":T$(1,1)="9":T$(MAXLEN1-1,MAXL
   EN1-1)="9":T$(2)=T$
JF 43 IF INT(TYPE1/10)=6 THEN T$(1,1)="+"
WZ 44 D=TYPE1-INT(TYPE1/10)*10
KU 45 IF D>0 THEN T$(MAXLEN1-D,MAXLEN1-D)
   ="."
PS 46 MAX=MAX1
MJ 47 IF INT(TYPE1/10)=6 THEN T$(1,1)="-"
KH 48 MIN=VAL(T$)
XT 49 IF INT(TYPE1/10)=5 THEN MIN=0:T$(1,
   1)="0"
SP 50 IF INT(TYPE1/10)=6 THEN T$(2,2)="0"
YW 51 X=7:Y=7:MAXLEN=MAXLEN1:CURS=3:TYPE=
   TYPE1
RR 52 GOSUB 107
OY 53 MIN1=VAL(RESULT$)
XA 54 IF RF=1 THEN 28
VX 55 IF RF=2 THEN 71
RN 56 POSITION 21,7:? "MAX
   "
CU 57 T$="":T$(1,1)="9":T$(MAXLEN1-1,MAXL
   EN1-1)="9":T$(2)=T$
JQ 58 IF INT(TYPE1/10)=6 THEN T$(1,1)="+"
XK 59 D=TYPE1-INT(TYPE1/10)*10
KM 60 IF D>0 THEN T$(MAXLEN1-D,MAXLEN1-D)
   ="."
KP 61 MAX=VAL(T$)
NQ 62 MIN=MIN1
KP 63 IF INT(TYPE1/10)=5 THEN MIN=0:T$(1,
   1)="8"
EI 64 IF INT(TYPE1/10)=6 THEN T$(2,2)="8"
JZ 65 X=26:Y=7:MAXLEN=MAXLEN1:CURS=3:TYPE
   =TYPE1
SA 66 GOSUB 107
QB 67 MAX1=VAL(RESULT$)
WC 68 IF RF=3 OR RF=4 THEN 40
UQ 69 IF RF=1 THEN 33
VP 70 IF RF=2 THEN 71
XK 71 POSITION 2,9:? "READY (Y/N)"
UX 72 X=15:Y=9:MAXLEN=1:CURS=0:TYPE=42
RV 73 GOSUB 107
DQ 74 IF RESULT$="Y" THEN 77
RK 75 IF RESULT$="N" THEN 17
NR 76 ? "□":GOTO 73
VG 77 X=X1:Y=Y1:MAXLEN=MAXLEN1:MIN=MIN1:M
   AX=MAX1:CURS=CURS1:TYPE=TYPE1
PF 78 IF MIN>MAX THEN 85
UZ 79 D=TYPE1-(INT(TYPE1/10)*10)
QT 80 IF TYPE<11 THEN 85
FW 81 IF TYPE<50 AND (D<1 OR D>3) THEN 85
YB 82 IF TYPE>69 THEN 85
RW 83 GOSUB 107
BY 84 OPEN #1,4,0,"K:"
UL 85 POSITION 2,23:? "□ANY KEY TO CONTIN
   UE / ESC TO QUIT";:GET #1,DAT
MA 86 CLOSE #1
RH 87 IF DAT=27 THEN END
SZ 88 GOTO 12
```

GETKEY is a routine that allows you to have fully controlled input and positing on screen - it is ideal for database applications

TABLE 2
TWO DIGIT TYPE (n1 n2)

n1 - the values for n1 are:-

1 all keyboard characters
2 alphabetic, punctuation and numbers only
3 alphabetic and punctuation only
4 alphabetic only
5 positive numbers only
6 positive or negative numbers

n2 - the values for n2 are:-

where n1 is from 1 to 4:-

1 lower case only
2 upper case only
3 both cases

where n1 is 5 or 6:-

0 to 9 the number of decimal places.

GETKEY

Turbo Basic

```
WO 1 REM *******************************
YZ 2 REM *      GETKEY V. 2.0         *
NZ 3 REM *   Turbo Basic Listing 1    *
FS 4 REM *       by L.C. JEFFS        *
SR 5 REM * -------------------------- *
CG 6 REM *  NEW ATARI USER - JAN '91  *
WU 7 REM *******************************
NN 8 REM
NK 107 PROC GETKEY
SV 108   D=TYPE MOD 10:T=TYPE DIV 10:RESU
    LT$="":A=1:IF MAXLEN=1 THEN A=0
ES 109   IF TYPE<50
LT 110     RESULT$(1,1)=" ":RESULT$(MAXLE
    N-A,MAXLEN-A)=" ":RESULT$(A+1)=RESULT$
XA 111   ELSE
HJ 112     RESULT$(1,1)="0":RESULT$(MAXLE
    N-A,MAXLEN-A)="0":RESULT$(A+1)=RESULT$
TA 113     I=MAXLEN-D
TE 114     IF D>0 THEN RESULT$(MAXLEN-D,M
    AXLEN-D)=".":I=I-1
HT 115     IF T=6 THEN RESULT$(1,1)="+":I
    =I-1
YE 116   ENDIF
LC 117   DAT=0:A=0:RF=0:DF=0:POSITION X-1
    ,Y:? ">";RESULT$;"<";
GB 118   WHILE RF=0
VY 119     IF A<0 THEN A=0
PV 120     TRAP 132
HF 121     GET DAT
BI 122     TRAP 40000
RF 123     A=A+1:IF A=1 AND DAT=126 THEN
    A=0:? "◘";:GOTO 133
SD 124     IF A>MAXLEN AND DAT<>126 AND D
    AT<>155 AND DAT<>43 AND DAT<>45 AND (D
    AT<28 OR DAT>31) THEN ? "◘";:A=A-1:GOT
    O 133
VM 125     IF TYPE<50
UF 126       EXEC CHARS
NC 127     ELSE
GX 128       EXEC NUMS
SP 129     ENDIF
NS 130     POSITION X,Y:? RESULT$;
SO 131     GOTO 133
VZ 132     POSITION X+MAXLEN,Y:? "◘";
XZ 133   WEND
YB 134   POSITION X-1,Y:? " ";:POSITION X
    +MAXLEN,Y:? " ";
WE 135 ENDPROC
QE 136 PROC CHARS
WM 137   IF DAT=155 THEN RF=5:GOTO 174
ZB 138   IF DAT=126 AND A>1 THEN RESULT$(
    A-1,A-1)=" ":A=A-2:GOTO 174
OJ 139   IF DAT>27 AND DAT<32
SY 140     IF ((CURS=1 OR CURS=3) AND (DA
    T>27 AND DAT<30)) OR ((CURS=2 OR CURS=
    3) AND (DAT>29 AND DAT<32))
MT 141       RF=DAT-27:POSITION X-1,Y:? "
    ";T$;" ";:RESULT$=T$:GOTO 174
MR 142     ELSE
NC 143       ? "◘";:GOTO 174
SE 144     ENDIF
YH 145   ENDIF
AY 146   ON T GOTO 147,152,159,166
UX 147   ON D GOTO 148,150,173
WD 148   IF (DAT>64 AND DAT<91) OR (DAT>1
    92 AND DAT<219) THEN 172
QY 149   GOTO 173
CF 150   IF (DAT>96 AND DAT<123) OR (DAT<
    224 AND DAT<251) THEN 172
QC 151   GOTO 173
YA 152   ON D GOTO 153,155,157
MG 153   IF (DAT>31 AND DAT<65) OR (DAT>9
    0 AND DAT<123) THEN 173
PX 154   GOTO 172
PR 155   IF DAT>31 AND DAT<96 THEN 173
QD 156   GOTO 172
ZT 157   IF (DAT>31 AND DAT<96) OR (DAT>9
    6 AND DAT<123) THEN 173
QJ 158   GOTO 172
TK 159   ON D GOTO 160,162,164
PT 160   IF (DAT>31 AND DAT<48) OR (DAT>5
    7 AND DAT<65) OR (DAT>90 AND DAT<96) O
    R (DAT>96 AND DAT<123) THEN 173
PQ 161   GOTO 172
NL 162   IF (DAT>31 AND DAT<48) OR (DAT>5
    7 AND DAT<91) THEN 173
PW 163   GOTO 172
ZM 164   IF (DAT>31 AND DAT<96) OR (DAT>9
    6 AND DAT<123) THEN 173
QC 165   GOTO 172
CI 166   ON D GOTO 167,169,171
FL 167   IF DAT>96 AND DAT<123 THEN 173
QL 168   GOTO 172
OO 169   IF DAT>64 AND DAT<91 THEN 173
PP 170   GOTO 172
XP 171   IF (DAT>64 AND DAT<91) OR (DAT>9
    6 AND DAT<123) THEN 173
NV 172   ? "◘";:A=A-1:GOTO 174
ZI 173   RESULT$(A,A)=CHR$(DAT)
WJ 174 ENDPROC
NL 175 PROC NUMS
GY 176   IF DAT=155 THEN 213
HD 177   IF ((CURS=1 OR CURS=3) AND (DAT>
    27 AND DAT<30)) OR ((CURS=2 OR CURS=3)
    AND (DAT>29 AND DAT<32))
RG 178     RF=DAT-27:POSITION X-1,Y:? " "
    ;T$;" ";:RESULT$=T$:GOTO 215
YZ 179   ENDIF
BN 180   IF I<1 THEN DF=1:A=MAXLEN-D
TN 181   IF DF=0 AND DAT=46 AND D>0 THEN
    DF=1:A=MAXLEN-D:GOTO 215
KB 182   IF T=6 AND A=1 THEN A=2
KV 183   IF T=6 AND (DAT=43 OR DAT=45) TH
    EN RESULT$(1,1)=CHR$(DAT):A=A-1:GOTO 2
    15
EF 184   IF (DAT<48 OR DAT>57) AND DAT<>1
    26 THEN ? "◘";:A=A-1:GOTO 215
UX 185   IF A=1 AND DAT=126 THEN ? "◘";:A
    =0:GOTO 215
DQ 186   IF DF=0 THEN 192
IR 187   IF DAT=126
AD 188     IF A=I+T-3 THEN DF=0:A=A-1:GOT
    O 194
HD 189     A=A-2:RESULT$(A+1,A+1)="0":GOT
    O 215
YC 190   ENDIF
UD 191   RESULT$(A,A)=CHR$(DAT):GOTO 215
IE 192   IF DAT=126
EI 193     IF T=6 AND A=2 THEN RESULT$(1,
    1)=" ":A=A-2:GOTO 215
KZ 194     IF I>1 THEN FOR DAT=I+T-5 TO T
    -3 STEP -1:RESULT$(DAT,DAT)=RESULT$(DA
    T-1,DAT-1):NEXT DAT
CA 195     RESULT$(T-4,T-4)="0"
ZJ 196     A=A-2:GOTO 215
YX 197   ENDIF
EP 198   IF (T=5 AND A>I) OR (T=6 AND A>I
    +1) THEN ? "◘";:A=A-1:GOTO 215
KQ 199   IF T=6
WK 200     IF I=1
BG 201       GOTO 204
RR 202     ENDIF
KA 203     RESULT$(2,I)=RESULT$(3,I+1)
AM 204     RESULT$(I+1,I+1)=CHR$(DAT)
XL 205   ELSE
XC 206     IF I=1
ZV 207       GOTO 210
SJ 208     ENDIF
BV 209     RESULT$(1,I-1)=RESULT$(2,I)
ES 210     RESULT$(I,I)=CHR$(DAT)
XQ 211   ENDIF
OM 212   GOTO 215
MR 213   IF VAL(RESULT$)<MIN OR VAL(RESUL
    T$)>MAX THEN ? "◘";:A=A-1:GOTO 215
LH 214   RF=5
WB 215 ENDPROC
OL 216 END
```

GETKEY

```
WO 1 REM ******************************
YZ 2 REM *       GETKEY V. 2.0        *
OA 3 REM *     Turbo Basic Demo       *
FS 4 REM *       by L.C. JEFFS        *
SR 5 REM * -------------------------- *
CG 6 REM *  NEW ATARI USER - JAN '91  *
WU 7 REM ******************************
NN 8 REM
ZR 10 DIM T$(38),RESULT$(38)
OC 11 X1=10:Y1=16:MAXLEN1=10:MIN1=10:MAX1
   =1999999:CURS1=0:TYPE1=52
UL 12 ? "K":POKE 752,0
XD 13 POSITION 14,1:? "GETKEY DEMO"
KY 14 POSITION 2,3:? "X CO-ORDINATE
   Y CO-ORDINATE"
XH 15 POSITION 2,5:? "MAXLEN
   TYPE"
GL 16 POSITION 0,10:? "==================
   ======================"
YS 17 X=17:Y=3:MAXLEN=2:MIN=1:MAX=37:CURS
   =3:TYPE=50:T$=STR$(X1)
YY 18 EXEC GETKEY
RD 19 X1=VAL(RESULT$)
SJ 20 IF RF=1 THEN 40
XB 21 IF RF=2 THEN 28
ZN 22 X=36:Y=3:MAXLEN=2:MIN=11:MAX=22:CUR
   S=3:TYPE=50:T$=STR$(Y1)
YP 23 EXEC GETKEY
QY 24 Y1=VAL(RESULT$)
ZV 25 IF RF=3 OR RF=4 THEN 17
XQ 26 IF RF=1 THEN 56
US 27 IF RF=2 THEN 33
PD 28 X=10:Y=5:MAXLEN=LEN(STR$(39-X1)):MI
   N=1:MAX=39-X1:CURS=3:TYPE=50:T$=STR$(M
   AXLEN1)
ZB 29 EXEC GETKEY
JT 30 MAXLEN1=VAL(RESULT$)
SW 31 IF RF=2 THEN 40
VL 32 IF RF=1 THEN 17
ZK 33 X=27:Y=5:MAXLEN=2:MIN=11:MAX=69:CUR
   S=3:TYPE=50:T$=STR$(TYPE1)
YS 34 EXEC GETKEY
WC 35 TYPE1=VAL(RESULT$)
MR 36 IF TYPE1<50 THEN POSITION 2,7:? "
                                       "
BZ 37 IF RF=3 OR RF=4 THEN 28
TC 38 IF RF=1 THEN 22
QU 39 IF RF=2 AND TYPE1>49 THEN 56
HV 40 IF TYPE1<50 THEN 72
XE 41 POSITION 2,7:? "MIN
   "
CJ 42 T$="":T$(1,1)="9":T$(MAXLEN1-1,MAXL
   EN1-1)="9":T$(2)=T$
CE 43 IF TYPE1 DIV 10=6 THEN T$(1,1)="+"
JU 44 D=TYPE1 MOD 10
KU 45 IF D>0 THEN T$(MAXLEN1-D,MAXLEN1-D)
   ="."
PS 46 MAX=MAX1
FG 47 IF TYPE1 DIV 10=6 THEN T$(1,1)="-"
KH 48 MIN=VAL(T$)
BJ 49 IF TYPE1 DIV 10=5 THEN MIN=0:T$(1,1
   )="0"
LH 50 IF TYPE1 DIV 10=6 THEN T$(2,2)="0"
YW 51 X=7:Y=7:MAXLEN=MAXLEN1:CURS=3:TYPE=
   TYPE1
YQ 52 EXEC GETKEY
OY 53 MIN1=VAL(RESULT$)
XA 54 IF RF=1 THEN 28
WP 55 IF RF=2 THEN 72
RN 56 POSITION 21,7:? "MAX
   "
CU 57 T$="":T$(1,1)="9":T$(MAXLEN1-1,MAXL
   EN1-1)="9":T$(2)=T$
CP 58 IF TYPE1 DIV 10=6 THEN T$(1,1)="+"
KF 59 D=TYPE1 MOD 10
KM 60 IF D>0 THEN T$(MAXLEN1-D,MAXLEN1-D)
   ="."
KP 61 MAX=VAL(T$)
NQ 62 MIN=MIN1
NX 63 IF TYPE1 DIV 10=5 THEN MIN=0:T$(1,1
   )="8"
WS 64 IF TYPE1 DIV 10=6 THEN T$(2,2)="8"
JZ 65 X=26:Y=7:MAXLEN=MAXLEN1:CURS=3:TYPE
   =TYPE1
YZ 66 EXEC GETKEY
JN 67 IF VAL(RESULT$)=0 THEN RESULT$=T$
QD 68 MAX1=VAL(RESULT$)
WE 69 IF RF=3 OR RF=4 THEN 40
TZ 70 IF RF=1 THEN 33
WJ 71 IF RF=2 THEN 72
XM 72 POSITION 2,9:? "READY (Y/N)"
UZ 73 X=15:Y=9:MAXLEN=1:CURS=0:TYPE=42
YW 74 EXEC GETKEY
ER 75 IF RESULT$="Y" THEN 78
RM 76 IF RESULT$="N" THEN 17
OJ 77 ? "▣":GOTO 74
VI 78 X=X1:Y=Y1:MAXLEN=MAXLEN1:MIN=MIN1:M
   AX=MAX1:CURS=CURS1:TYPE=TYPE1
PH 79 IF MIN>MAX THEN 85
BZ 80 D=TYPE MOD 10
QV 81 IF TYPE<11 THEN 85
FY 82 IF TYPE<50 AND (D<1 OR D>3) THEN 85
WA 83 IF TYPE>69 THEN GOTO 85
YX 84 EXEC GETKEY
WX 85 POSITION 2,23:? "▣ANY KEY TO CONTIN
   UE / ESC TO QUIT";:GET DAT
RF 86 IF DAT=27 THEN END
SX 87 GOTO 12
```

TABLE 3
CURSOR TYPES

0 - no movement
1 - vertical movement
2 - horizontal movement
3 - both horizontal and vertical movement

GETKEY

TABLE 4
CURSOR MOVEMENT

Direction	value_of_RF
up	1
down	2
left	3
right	4

by L.C. Jeffs

DISK BONUS

TURBO BASIC DOUBLE BILL!*

8-PRINT

for the 1029 PRINTER

by Richard Gore

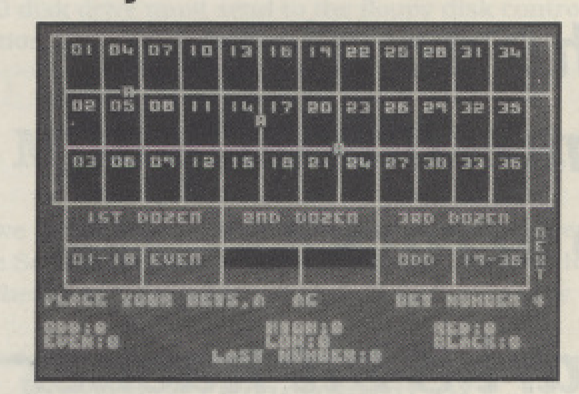
Here we have a super program to enable you to get much more use from your 1029 printer. 8-PRINT is a Graphics 8 screen designer that allows you to design and print out large address labels or labels to use on the front of folders or school books.

The program features a number of drawing utilities as well as automatic borders, fill patterns and text in a variety of sizes and full instructions for use are included in the program. Boot it up and get your 1029 working a little harder for you!

PLUS

ROULETTE

by Chris Guise



Place your bets! The wheel is spinning and the winning number is .... Now you can pay a visit to the Casino and take your chance with Lady Luck without risking a penny! There are comprehensive instructions for play within the program and all you need to do is place your bets. How much money will you make?

Roulette is a nicely written game that should give everyone a great deal of pleasure.

***READY TO RUN - TURBO BASIC NOT REQUIRED**

The NEW ATARI USER Issue Disk is sent automatically to disk subscribers but is also available separately if you like the look of the above programs. Remember that it also includes all of the programs from this issue which will save you hours of typing. The Issue 48 disk is available for £2.95 from PAGE 6, P.O. BOX 54, STAFFORD, ST16 1DR. Telephone orders may be placed on 0785 213928 using your credit card.

EVERYTHING YOU ALWAYS WANTED TO KNOW ABOUT DISKS

How is a floppy disk formatted?

How is formatting used for protecting software?

Why do disks sometimes throw up errors?

Atari 8-bit hacker G.L. Spencer helps provide some clues

One of the many things I like about the 8-bit Atari computers is that they are great machines on which to experiment and learn more about computing. Recently I have been tinkering about with my Atari disk drive and in the process I made a number of interesting observations, which I thought might make for an interesting article.

First of all let's go back to basics. When you purchase a new floppy disk, it consists of a thin coating of a magnetic material on both sides of a flexible backing. The magnetic particles of a virgin disk are randomly oriented and, if read while in this condition, will produce the equivalent of white noise. The formatting process lays down a series of concentric circles, known as tracks, onto which data can be stored. The tracks on a floppy disk can be likened to the grooves of a record in that it is only in the grooves of a record and on the tracks of a disk that the music and information is stored. After the formatting has finished there are forty tracks on a standard 5.25" floppy disk, each separated from another by bands of randomly oriented medium. The tracks on an Atari disk are numbered 0 - 39, with track 0 being the outermost track, and are spaced equally distant from each other. This last statement may sound rather obvious but on many computers it is possible to lay tracks in unexpected positions, and this is often used as a means of copy protection. For example, imagine the effect on a copy program of a disk that had been formatted in the manner shown in Figure 1

The incorrectly positioned track 2 is known as a half track since it is a half track away from a standard track position. Luckily for Atari 8-bit owners, disk protection using half-tracks is not possible, since the stepper motor, which moves the head of the disk drive, cannot be made to search for half-tracks. Although commercial disk copiers can easily create Atari format disks with half-tracks, these are unreadable by a standard Atari disk drive and are hence useless.

DIVIDED INTO SECTORS

Anyway, getting back on track! Each track on a disk is divided up into a series of sectors. On a 1050 disk drive this is either 18 sectors in single density or 26 sectors in enhanced density. Since the 1050 disk drive is 'intelligent', once one gives it the command to format a diskette ($21 for single density, or $22 for enhanced) the computer and user have no say in either the location of the tracks, the order of the sectors on the tracks or anything else. All are preset by the ROM in the disk drive. The reason I stress this rather obvious piece of

information is that since there are a variety of ROMs available for the Atari 8-bit drives, there are an equal number of 'standard' disk formats. These disk formats all contain the same sectors on a particular track but differ in the sequence of the sectors on the track.

Although the sequence of sectors on a track may sound rather insignificant, it isn't. It greatly affects the speed that data may be extracted from the disk and is occasionally used in disk protection. The standard 1050 disk formats have an interleave of 2. When a 1050 reads a track, it is able to read only 2 numerically consecutive sectors (e.g. sectors 4 and 5) per revolution of the disk. In order to achieve an interleave of 2, consecutive sectors are placed as far apart as possible on the track as shown in Figure 2.

You will notice that sector 1 is as far away from sector 2 as possible and physically adjacent to sector 3. Although this may appear to be a strange way to place the sectors, there is a very good reason for it. It takes the 1050 disk drive approximately 1/100th of a second to read the data from the disk into the disk drive's memory but, due to the slow serial interface, it takes almost 1/10th of a second (or almost half the revolution of the diskette) to transfer the data from the disk drive memory to the computer's memory. Hence any sectors which pass under the head during this period cannot be read until the disk has completed another revolution. An interleave of 2 is ideal for an unmodified Atari disk drive, since it enables the fastest data transfer possible with the standard baud rate. Much higher interleaves are found on disks that have been formatted with high speed disk drives, e.g. US Doubler, Happy drives etc. The highest interleave that I have discovered was an interleave of 9 on some commercial software (naturally). Operating with an interleave this high, a high speed disk drive could read or write the disk four and a half times faster than a standard 1050. One disadvantage of manufacturers using such high interleaves is that when the data is read in a standard 1050 disk drive, it takes twice as long to load. If you listen to the sound of your disks as they load, you can easily identify these disks by their slower beep-rate. Painfully slow aren't they?

IMPROVING THE SPEED

When you read or write on a standard disk drive, you are reading or writing 128 byte sectors. A number of the non Atari drive manufacturers have devised interesting ways of improving the speed of their drives. They include a faster baud rate (between the disk drive and the computer), higher interleave and track buffering. In track buffering, the disk drive reads a whole track into its RAM instead of merely a single sector. This enables a single disk read to access the next 18/26 sectors from the RAM in the disk drive, without having to carry out a further disk access. Since the sectors are now stored in the disk drive's RAM, the speed of the drive is now only limited by the transfer rate between the drive and the computer. One would expect the limit for such drives to be about nine times that of a standard Atari disk drive. Track buffering has both its advantages and disadvantages. Since an entire track is read and then searched for the first occurrence of a sector, many protected disks will not work unless the track buffering is disabled.

The manner in which tracks are laid down on a disk is a complex but highly fascinating topic. The microprocessor in the 1050 disk drive must send to the floppy disk controller the information shown in Figure 3.

MORE THAN DATA

When we speak about a 'sector' we are referring to everything from the Sector ID through to the second CRC (Cyclic Redundancy Check). the sequence in Figure 3 makes up only the first

Figure 1 - Non standard tracks

```
----------- track 0 -----------      < correctly positioned
*********************************
*********************************    < unformatted medium
*********************************
----------- track 1 ----------       < correctly positioned
*********************************
*********************************
*********************************
*********************************    < expected position of track 2
*********************************
----------- track 2 ----------       < actual position of track 2
*********************************
----------- track 3 ----------       < correctly positioned
```

Figure 2 - Placement of sectors with an interleave of 2

```
. . . 1 . . .
. . . . 3 . .
. . . . . 5 .
. . . . . . .
. 6 . . . . .
. . 4 . . . .
. . . 2 . . .
```

sector of a track. Following the Inter-record gap will be another 17 sectors (an enhanced density track uses different Hex codes from those shown, as well as having 26 sectors per track). Notice how, although the computer considers the sectors to be numbered 1 - 720, the disk controller only knows of sectors 1 - 18. The microprocessor in the disk drive must convert the sector number from the computer into a Track Number and Sector Number before it can be used by the disk controller.

EVEN FASTER

Changing the order of Sector ID's on a track is often used to produce a higher interleave on high speed disk drives. For the standard 810, Atari claims that the order of sectors on a track is: 18, 1, 3, 5, 7, 9, 11, 13, 15, 17, 2, 4, 6, 8, 10, 12, 14 and 16; corresponding to an interleave of 2. By timing the number of jiffies it takes to read two sectors, I was able to determine that the sector order on a standard 1050 is: 1, 3, 5, 7, 9, 11, 13, 15, 17, 2, 4, 6, 8, 10, 12, 14, 16 and 18; also an interleave of two. One commercial disk which I own had the following sector order: 1, 7, 13, 2, 8, 14, 3, 9, 15, 4, 10, 16, 5, 11, 17, 6, 12, 18. This corresponds to an interleave of 6 which I believe is a common interleave on IBM PC's, but it is painfully slow on a standard 1050 disk drive.

One commonly encountered disk protection technique is the duplicate sector. With custom disk drives there are several ways these may be created. The simplest is to lay down the track with one of the Sector numbers (part of the Sector ID) duplicated. Since the Sector ID is not altered by READ or WRITEs to a sector, this creates a second copy of the sector e.g. 1, 3, 5, 7, 9, 11, 13, 15, 17, 2, 3, 6, 8, 10, 12, 14, 16, 18.

In this example sector 4 has been turned into a duplicate of sector 3. Since Sector 4 is 'missing' and cannot be read, it is considered to be a 'bad' sector.

An alternative method of creating duplicate sectors involves decreasing the size of the inter-record gaps (the gaps between sectors) and squeezing and additional sector onto the end of the track e.g.
1, 3, 5, 7, 9, 11, 13, 15, 17, 2, 4, 6, 8, 10, 12, 14, 16 18, 2
This form of duplicate sector is not accompanied by a 'bad' sector on the same track and will deceive users of sector copiers into thinking that they have copied an unprotected disk.

SOME BASIC PROTECTION

So how does a duplicate sector enable a disk to be protected? Well! There are many answers to this one. If a sector on a standard disk is read twice, the disk must make one complete revolution between the sector being read the first time and being read the second time. This results in the second read taking approximately 12 jiffies. When the sector is read the second time the data will be exactly the same and hence the checksums for each read will be identical. A disk with two copies of a particular sector will read the second sector within half a revolution of the disk, therefore taking only 6 jiffies for the second read. It is therefore possible to time the second read and determine whether there are duplicate sectors on the disk. Alternatively, one could compare the checksum for each of the two reads. If the two sectors contain different data, then they will invariably yield different checksums. A standard non-duplicate sector will always return the same checksum no matter how many times it is read.

Figure 3 - information sent to the floppy drive controller

Pre index gap	**40 bytes of $FF**	
	6 bytes of $00	
Index Mark	**1 byte of $FC**	
Post Index Gap	**26 bytes of $FF**	
	6 bytes of $00	
Sector-ID	**1 byte of $FE**	**Address mark**
	1 byte	**Track Number 0-39**
	1 byte	**Side Number 0**
	1 byte	**Sector Number 1-18**
	1 byte	**Sector length 0 for 128 bytes sectors**
	1 byte of $F7	**the floppy disk controller writes two bytes of a CRC to the disk instead**
ID Gap	**11 bytes of $FF**	
	6 bytes of $00	
Data Address Mark	**1 byte of $FB**	
Data Region	**128 bytes of $00**	**once again the floppy disk controller writes two bytes of the second CRC**
Inter-record Gap	**27 bytes of $FF**	
	6 bytes of $00	

BAD DISKS

Occasionally one may find an old or physically damaged disk which possesses a sector that appears to be both a duplicate sector and a bad sector. When the sector is read using a disk repair program, a section of data on the sector can be seen to change with each read and the disk drive returns a disk error (Error 144). These are the characteristics of a 'fuzzy' sector. A fuzzy sector is one in which at least a part of the data region of a sector has become unformatted. This unformatted region produces a random signal when it is read and hence gives the appearance of a duplicate sector. The disk error (144) arises since the CRC found at the end of the data does not correspond with the CRC calculated by the microprocessor in the disk drive. If you have not guessed, a CRC (Cyclic redundancy Check) is like a super-accurate 16-bit checklist. Fuzzy sectors cannot be created on a standard 1050 but can be created on custom drives by formatting a track with a 'short' last sector and not laying down a trailing gap.

NOT REALLY A CIRCLE

The common description of a track, as being circular, is misleading. A track is more accurately described as being C-shaped, with a small unformatted region between the first and last sectors on the track. A 'short' sector can be created by sending less than 128 bytes to the floppy disk Controller before sending the Hex code of $F7 which forces the writing of a CRC. Since a standard 1050 always expects a sector to be 128 bytes in length, it will read the 'short' sector, CRC and unformatted gap region until it obtains 128 bytes. You can well imagine that if the 'short' sector consists of only 6 bytes of data, there is going to be 6 bytes of data, 2 bytes of CRC and 120 bytes of rubbish sent to the computer.

Short sectors are occasionally used by software houses to create disks with large numbers (e.g. 18 or more) of duplicate sectors on a single track. This is possible because a short sector can be considerably smaller than a standard sector. Duplicate short sectors always produce disk read errors (#144) but the data does not constantly change as does the data in a fuzzy sector. Hence it is possible to distinguish fuzzy sectors from duplicate short sectors. I might add that my disk drive is not capable of creating either type of sector but, with the aid of a disk utility, it is possible to identify them both.

DISK ERRORS

Bad sectors occur on disk by design and by accident, it is the latter that I particularly hate. At one stage my disk drive used to have great trouble swapping from enhanced to single density. In my ignorance I used to switch if off and on again and nine times out of ten this would jolt the disk drive into the correct density. Unfortunately on the other one time out of ten it would randomly add CRC errors and wreck the disk. I may be a slow learner but I don't do it any more.

A CRC error is the most common of the 'naturally occurring' disk errors. It results when the data in a sector does not match the CRC stored at the end of the sector. I mentioned previously how a CRC can be considered to be a super-accurate form of checksum. It has the advantage over the usual checksum in that it is not as easily tricked by long bursts of errors. Mainframes not only use CRC's for error detection but also for error correction. Unfortunately, the Atari disk drives are not quite that bright. A sector containing a CRC error will produce the usual DISK ERROR #144 but can be identified from other disk errors by the following characteristics: data is read into the buffer from the sector; the response time is relatively quick; if a STATUS ($53) command is sent to the disk drive following a 'bad' read the device status of $F7 is returned in byte $02EB. Fuzzy sectors and short sectors are special forms of CRC error and also display these characteristics.

In theory there are two possible forms of a CRC error. I have only ever encountered a CRC error in the data field, however it is possible to create a CRC error in the Sector ID field. Because the Sector ID is considerably smaller than the data field, an error here would be a much rarer occurrence, but would be of greater significance when it does occur. This form of CRC error would not result in data being stored in the read buffer and would return a Device Status ($02EB) of $E7.

IDENTIFYING THE DATA

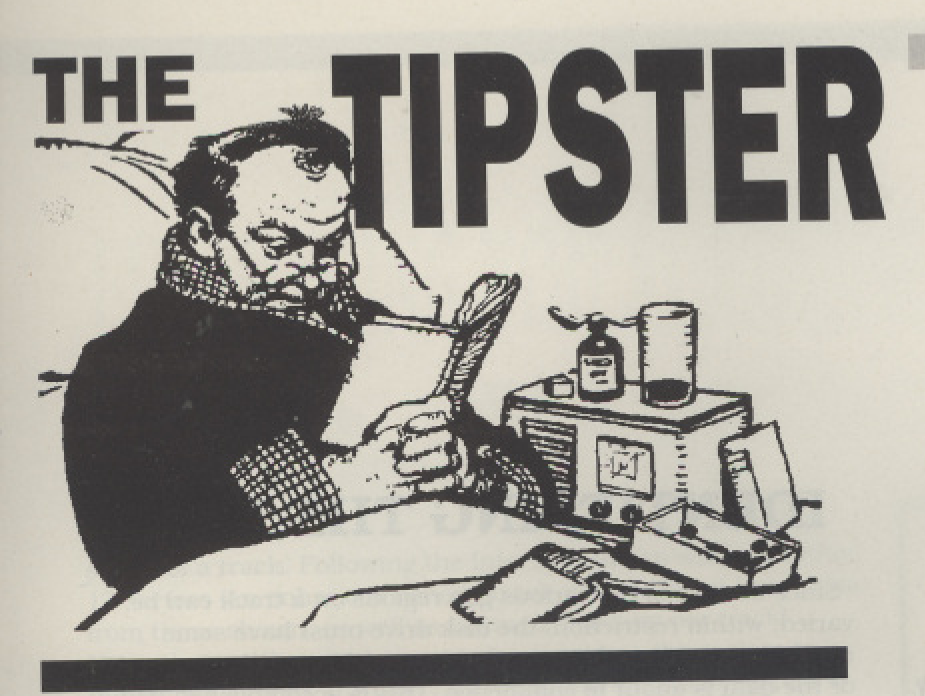
Since the size of the various gap regions on a track can be varied, within restriction, the disk drive must have some means of knowing when a gap is over and either the Sector ID or the data is about to commence. This is accomplished using the ID Address Mark to identify the start of the data. When a WRITE sector command is sent to the disk drive, the Floppy Disk Controller searches the track for the correct Sector ID. Once this is found, the controller counts off 11 bytes (in single density) and commences to write the six zero bytes, the Data Address Mark, 128 bytes of data, the two byte CRC and a final byte of $FE. many of the non standard disk drives are capable of variations upon this theme which is what enables them to produce deliberate sector errors. For example, if there are less than 128 bytes of data sent from the microprocessor in the disk drive to the floppy disk controller, the the controller will fill the rest of the sector with zeros and write an incorrect CRC. This is the floppy disk controller's way of flagging that the sector is in error. Some drives are also capable of requesting that the sector be written to the disk with a 'Deleted Data Mark'. This is a non-standard data mark, which will produce the usual DISK ERROR #144 when read. Characteristic features of Deleted Data Marks are: they do not prevent the data being read into the buffer, the response time is relatively quick and the Device Status byte ($02EB) returns with a value of $DF. It is possible to create a sector with both a Deleted Data Mark and CRC error, these return a Device Status Byte of $D7.

THAT AWFUL NOISE!

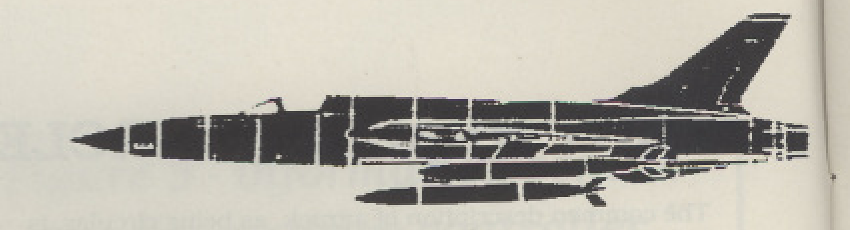
There are two types of disk error that are characterised by painfully long read times and horrible grinding sounds coming from the disk drive. These are the 'Missing Sector' and the 'Lost Data Record'. The 'Missing Sector', as its name implies, occurs when the desired Sector ID could not be found (even after much searching and gnashing by the disk drive). It is characterised by a Device Status byte of $EF. The 'Lost Data Record' also returns a Device Status byte of $EF and occurs when the required Sector ID was found, but this was not followed by a readable data record. This is the standard hacker's bad sector produced by modifying the write speed of the disk drive. Fortunately, for the hackers, these two types of bad sector are not distinguishable by the disk drive.

Well I hope I haven't bored you with some rather heavy concepts but rather given you some idea into why disks go wrong, how disks are protected and perhaps why some drives will read certain disks while others won't. Why don't you play around yourselves and try to learn a little more?

This article first appeared in FEEDBACK, the journal of the Adelaide Atari Computer Club in Australia and we felt it would be of interest to many of our readers. Maybe there is enough information here to discover why Flight Simulator II will not run on an XF551 drive? If anyone works it out and can come up with a fix for the this program we will publish it for the benefit of hundreds of other Atari owners, now missing out on a fine program.



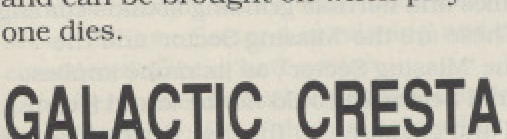
SEQUELS



Well Christmas has come and gone and the endless rounds of turkey sandwiches have been resigned to the dustbin and your appetite turns to the more appealing menu of game tips. The master chef Tipster is therefore here to serve you the very best the Atari world has to offer. This issue I bring you the complete maps of (wait for it) Joe Blade I and II! (Can't be bad!) The inner secrets of Airstrike II and Living Daylights are revealed but what am I wasting all this space for, lets get busy ....

RAMPAGE

Monster tips for RAMPAGE from Kevin Cooke (thanx Kev!) If you don't have anyone to play with you then start the game in two player mode and then move player two to the very edge of the screen and flick the stick so that he disappears from it and then continue playing as normal as he is impervious to harm and can be brought on when player one dies.



GALACTIC CRESTA

If you've got issue disk 38 you'll have got the game GALACTIC CRESTA and Jonathan Burroughs has some hints 'n' tips for it. If you stay in the bottom right hand corner you will not be shot. If by some chance one of the aliens does happen to get underneath you, then the bullet, which you are holding, will destroy it. You will only have to move 3cm to the left, shoot then move back again. Also there are 8 waves of aliens before you go to a different level of aliens which are faster but they look the same as the first.

POLE POSITION

A quickie from Paul Norman of Tilbury has you racing round Pole Position in brake neck slow motion! If you are having trouble completing the 8 lap race then put a heavy weight on the SPACE bar and the game slows down quite considerably.

AIRSTRIKE II

Barry Port in South Wales and Coventry must have very busy air traffic controllers as they sort out all the traffic from Michael Jones and Ralf Godfrey respectively who send in the following tips for Airstrike II. Michael says to press Select or Option when the music plays until you hear a buzz. If it doesn't work first time then do it again until it buzzes twice this time. You should find yourself on the second level. From Ralf is the tip that if you press the Reset button after loading the game you will notice that the tune is now higher. Press Start and the game will begin. Hold down the Reset button and allow your plane to fly in the centre of the screen. As soon as the first rocket takes off you must release Reset and you will find yourself back on the opening screen. When you begin the game again you should find that the first rocket has either disappeared or lies helplessly in the middle of the screen for you to shoot. This works with other rockets as well.

Still Flying!

A couple more tips for you aviators out there, they come from James Wynne from Dublin. **BLUE MAX**'s can end up with infinite bombs if they keep pressing the fire button and in **ACE OF ACES** if you see a bomber on your radar, go either very high or very low to lose him.

MIDNIGHT MAGIC

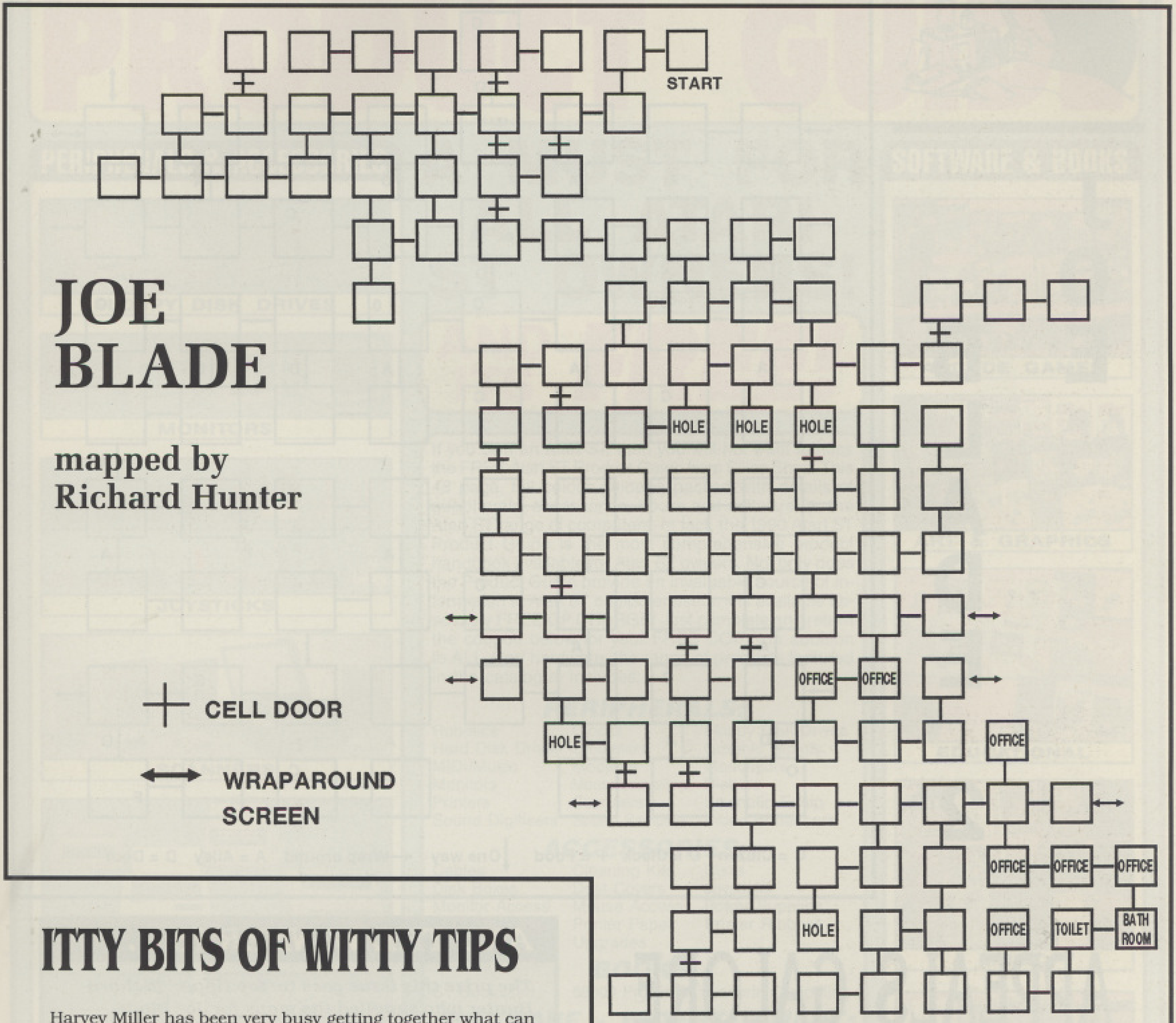
Jeremy Borrett of Wellingborough gives Tommy the pinball wizard a run for his money with this tip for "David's Midnight Magic". When the ball goes down the side (left or right) nudge the joystick (up) just once and the ball will flick back into play - this will enable you to keep the ball in play if you haven't got a "Magisave Magnet" in the game.

SORRY

I must apologise for the information that went out in issue 46 about Missile Command. It appears from Jeremy's comments that the cheat doesn't work on the XE Games System. This maybe because of the fact that the game is on the internal ROM and has been slightly "tweeked" to fit in with the Operating System.

JOE BLADE

mapped by Richard Hunter



ITTY BITS OF WITTY TIPS

Harvey Miller has been very busy getting together what can only be considered as an encyclopedia of games tips. I will bring you just a couple of the many tips sent to me, so here goes. In **REBOUND** if you wish to defeat the computer on level 3 then simply place your bat on the far left corner and hit it quickly. After going one point up you will get a return of serve, which again should be hit quickly from the same position. Funny isn't it, because doing this five more times the computer will have been whitewashed, and on the hardest level too!

Lee Nelson from Woolwich has the nack of giving hints that solve that little tricky corner that many people, including myself have. **HOVVER BOVVER** is no more a bovver if you try to stay behind a hedge for as long as possible, then set the dog onto the neighbour whilst mowing the rest of the grass.

Moving swiftly along to another ball game entirely - when playing a human opponent on Hardball, use the changeup pitched at bottom right if the batter is standing left, or bottom left if the batter is standing right. This pitch only results as a ball if tried against the computer. If your pitcher does not have a changeup, substitute him until the pitcher has.

GET OUT THE MAGNIFYING GLASS!

Aztec has become easier to gain more bombs in since Darren Amos sent in this tip. Go to the end of the platform and hang your hand just over the side, then press the fire button three times as fast as possible. This will give you endless bombs. Also if you have the gun then you can walk through walls on the right while holding it. That way you don't have to blow them up.

Richard Hunter brings the long sought after and difficult to map Joe Blade I and II. In Joe Blade I the 6 booby traps and all the keys are placed randomly. Use the map to plan your route, keys are scarce and shouldn't be wasted. Locate all the booby traps before they're activated, then you've ample time to complete your mission. Joe Blade II is pretty straight forward if you use the map, but beware of the sub-games as they come up very quickly so stay alert!

SSSHHH! ...

Now for something a bit different from Pete Lane. He has found that the disk containing DIGIDRUM from 2-BIT SYSTEMS has an undocumented feature which is the inclusion of the file INVADERS. If you enter DOS and go to option L, if you type INVADERS for the file name then you get a really good copy of the original Space Invaders game. This is only available on the disk version which Pete bought about four years ago. Have any of you found any hidden games?



JOE BLADE 2

START

C = Citizen O = Clock F = Food ↓One way ←→Wrap around A = Alley D = Door

APPEALS GALORE

From Lee Nelson comes this plea. He wants to know how do you get past the tower in **SPELLBOUND**? He has read the solution in issue 42 but this doesn't tell him how to get past it.

Harvey Miller has a question along with his many hints. **MEDIATOR** is proving a problem as he wishes to know how to get the horse across the tree once it is over the river.

I would like to make a personal plea to all the heroes out there, ***where are all the maps of the adventures*** you have completed. (Get my drift?)

Well that just about wraps it up for this issue but remember that it is you who makes it what it is so keep them there tips coming in. I would like to hear from folks who have had problems with certain games using **TRANSDISK (I TO IV)** because we are compiling a comprehensive list of all the games that have been transferred and I know that some games that have caused some users problems have been successfully transferred by others. Perhaps some of you have got some tips to help others?

Out of space now so, until next time, I will leave you to sort out lots more tips so keep gaming and don't let your joystick go sloppy!

AND THE WINNER IS ...

The prize this issue goes to 'top tipper' Richard Hunter who supplied the maps for Joe Blade. Richard gets the GAMES COMPENDIUM which should keep him away from the computer for a few hours.

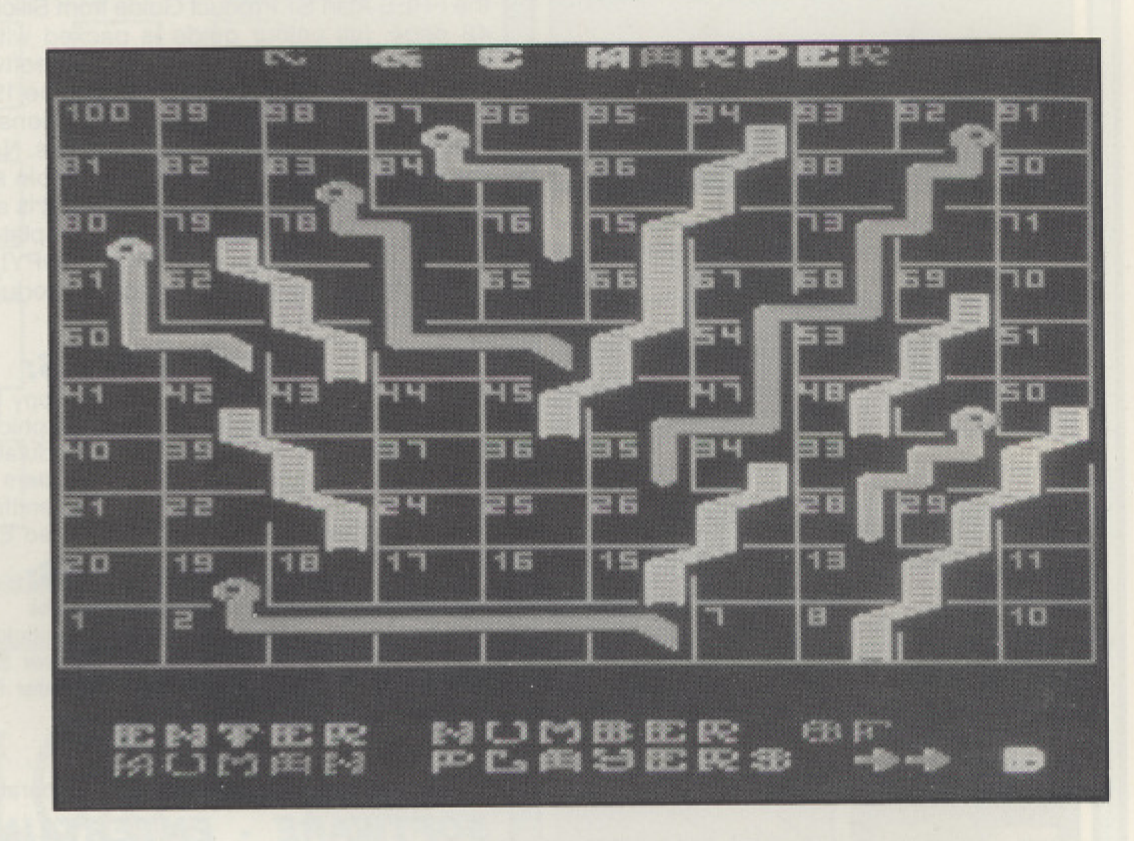
This issue we have up for grabs AN ELECTRONIC MINI BACKGAMMON GAME that is great fun once you figure out how to use it! Mind you it becomes so addictive we might decide to keep it (well we had to see if the batteries worked, didn't we?). If you want a chance of winning this neat little bit of electronic kit then you had better get some of those tips, hints and maps in. A few complete solutions to adventures or others wouldn't go amiss either (hint, hint!)-

Send your tips to:

THE TIPSTER,
New Atari User,
P.O. BOX 54,
Stafford.
ST16 1DR

SNAKES & LADDERS

Kevin Harper presents a machine code version of one of the classic board games for up to four players



Snakes and Ladders is so well known that it seems almost superfluous to include instructions of how to play. You just climb up the ladders and slide down the snakes but in this version the computer takes care of all this so all you need to do is play.

When the game is run it will display the title screen and pressing any key will take you to the game board. Here you can select the number of players (up to four) using the SELECT key. A demo version is also available by selecting 'D'. There will always be four players playing with the 'non human' players controlled by the computer. The demo is just the computer controlling all four players.

Having selected the number of players the fire button will start the game. If you selected the demo then pressing any key will return the game to the title screen and pressing SYSTEM RESET at any time will also take you back to the title screen.

That's about it, just get some friends together and play!

TYPING IT IN

Although the program will check all data lines when it is run we recommend that you use TYPO 3 so that no errors are made in the loading routines.

Type in the listing as shown and SAVE or CSAVE a copy before you run it. Disk users should have a formatted disk ready with DOS written to it. The program will create an AUTORUN.SYS file which will enable the game to be booted straight from disk. Cassette users can create an autoboot tape. In both cases the OPTION key must be held when booting to disable Basic.

```
WO 1 REM ********************************
VO 2 REM *      SANKES & LADDERS        *
RT 3 REM *             by               *
OF 4 REM *        Kevin Harper          *
SR 5 REM * ---------------------------- *
CG 6 REM *  NEW ATARI USER - JAN '91    *
WU 7 REM ********************************
NN 8 REM
IH 10 DATA 48A9708D0AD48D09D4AD0406186901
   C914F0068D04064CA163A9008D0406A003B9C4
   029900068810F7AD03068D16D08DC4,4659
NC 20 DATA 02A002B900069917D099C5028810F4
   A9A88D0002684048A9788D0AD48D09D4A9068D
   16D0A92A8D17D0A9C88D18D0A97A8D,5524
RK 30 DATA 19D0A9CC8D0002684048A9748D0AD4
   8D09D4A9DC8D0002684048A9708D0AD48D09D4
   A90F8D16D0A9B88D17D0A9268D18D0,5637
QP 40 DATA A9F88D19D0A9618D00026840F04626
   64F04662640606060606060606860606060606
   060606060606F0460666461A664100,3253
NL 50 DATA 6400336EA1EB257300A1EE24006CA1
   E42465B2F30000000000000000000022790000
   0000000000000000000000002B007B00,2620
QJ 60 DATA A300E82172B0E532000000003B3C3A
   06390638063706360635063406330632030105
   0105010501490105010501D3010501,1976
VE 70 DATA 8801022B002C002D002E4A4C4F2F00
   D5D430008E8B31070105010501890105014D01
   05D30501058D0501022A002900288A,2275
CL 80 DATA 8F00274D26D5D400258E8B00240701
   4901D301058D05015001D30105018D01050102
   1C4D1DD7D6008D001E001FD3200021,3012
KX 90 DATA 8D22002307014D0105D3058D050105
   01D3018E8C8B01D301021B4A4C51D7D68A8C8C
   91D5D41A8D1900D5D4180701050152,3930
GC 100 DATA 01D301050192D305018D0105D3050
   102330034003500360037D5D400388D39D5D40
   03A07010501D30105010501D3018E8C,3107
QC 110 DATA 8B01D3014801D3320031D7D600300
   02F002E8D2D002C004E4BD5D401050105D3050
   1050105019001D3014E4B05D3022500,3119
VY 120 DATA 2600D7D6270028002900D5D42A4D2
   BD5D4070105010501D3010501050105D305015
   001D30102240023002200210020001F,2561
OR 130 DATA D5D4001E00D5D41D0701050189010
   50105010501D301050105D30501021800198A8
   C8C8C8C8C8C911A001BD5D4001C07,3346
TO 140 DATA 04000400040004000400049204000
   4D304000407060606060606060606060606060
   606060606060600000707265737300E1,1306
NX 150 DATA EEF9006B657900F4EF00000000000
   00000232F2E34292E3525000000000000706C6
   179657200000000000000000000000000,2309
ML 160 DATA 0000707265737300B3B4A1B2B4000
   0000000000000000000000000E7E1EDE50000E
   FF6E5F2000000000000077696E6E657200,3972
DZ 170 DATA 00302C213925320000000000002F2
   E25000034372F00003428322525262F353200B
   0ACA1B9A5B2000000000000000000000,1994
MQ 180 DATA 00000000ADAFB6A500B9AFB5B200A
   3AFB5AEB4A5B200000000656E74657200EEF5E
   DE2E5F200AFA6000000000000A8B5ADA1,5613
MQ 190 DATA AE00706C617965727300FCFC00000
   0F4E8F2EFF7F30000000000000000000000000
   000ADAFB6A5B3000000000000000000000,3767
FU 200 DATA -1,245
ON 210 DATA 00000000000000000000000000000
   03C7EE7E7E7E7663C3C7EE7F7E7EF663C3C7EE
   7F7E7F7663C3C7EEFE7E3F7763C0000,5180
JZ 220 DATA -1,2009
TV 230 DATA 00000000000000000000000000000
   00000000000000018381818181800007E42027
   E407E00007E42027E027E0000404848,1342
EP 240 DATA 7E080800007E42407E027E00007E4
   2407E427E00FFFFFFFFFFFFFFFFEFFFFFFFFF
   FFF7FFEFFFFFFFFFFFFFFFF7FFFFFFFFF,8363
VT 250 DATA FFFFFFFFFFFFE7E7FFFFFFFFFFFFF
   FFFFFFFFFFFFFFFFFFFFFFFFFFFFFFFE7E7FFF
   FFFFFFFFFE7E7FFFFFEFFFFFFFFFFFFF,12350
ZX 260 DATA FF7FFEFFFFFFFFFFFFFFFFF7FFFFFE7E
   7FFFFFFFFFFFFE7E7FFFFFFFFFFFFE7E7FFFFF
   FFFFFFFE7E7FFFFFFFFFFFFFE7E7FFFF,11998
TZ 270 DATA FFFFFFFFE7E7FFFFFEFFFFFFFE7E7F
   FFF7FFEFFFFE7E7FFFFFF7FFFFFE7E7FFFFFFF
   FFFFFE7E7FFFFE7FFFFFFE7E7FFFFE7,11901
PY 280 DATA E7FFFFE7E7FFFFFFFE7FFFFE7E7FFF
   FFF003C527E527E4200007C567C54567C00003
   C527850523C00007C527E52527C0000,6210
QJ 290 DATA 7E527850527E00007E42507050400
   0003E527056523E0000664A527E4A5200007E5
   A381C5A7E00007E4A08086830000066,3156
BC 300 DATA 4A70504A66000070504046427E000
   0667E5A42426600006662566A466600003C4A7
   E4A4A3C00007C52527C404000003C42,3210
PQ 310 DATA 425A4C3A00007C52527C486600003
   C4A3C0A6A3C00007E5A183C181800006642424
   2423C000066427E4224180000664242,2674
OF 320 DATA 5A7E6600000663C18183C660000664
   23E02623C00007E460810627E001C3B1C386F6
   63B00000C0E7F7F0E0C00003070FEFE,2941
HH 330 DATA 703000183C7E7E181818000000000
   00000000000000000000000000000000000000
   000000000000000000000000000000000,568
GY 340 DATA -1,490
KK 350 DATA 8080808080808080FF01010101010
   1FFFF0101010101010101808080808080800000
   0000000000000FFFF00000000000000001,3210
FP 360 DATA 010101010101011C3E73737F7A3C3
   C387CCECEFE5E3C3C3C3C3C3F3F3F1F003C3C3
   CFCFCFCF800000000FFFFFFFF003C3C,4480
NZ 370 DATA 3C3C3C3C3C0000001F3F3F3F3C0
   00000F8FCFCFC3C3C3C3C3C18000000000000E
   0F0F8FCFC7C3C1C0C040000007E427E,3790
YE 380 DATA 427E427E42FE98E080000000000000
   30F317E427E4200C0F08C7E427E427F1907010
   000000008090B090909080808080B888B8,4543
UC 390 DATA A0B8808080B888888888808080B8A
   8B8A8B880808097B595959780808092B692929
   280808097B197919780808097B49791,7213
FP 400 DATA 9780808097B497959780808097B19
   1919180808097B597959780808097B59791978
   08080F795F5C5F7808080F296F2C2F2,7717
XP 410 DATA 808080F791F7C4F7808080F595F7C
   1F1808080F794F7C1F7808080F794F7C5F7808
   080F795F7C5F7808080F795F7C1F780,8927
TP 420 DATA 8080F791F791F7808080F595F791F
   1808080F794F791F7808080F794F795F780808
   0F791F191F1808080F795F791F78080,8616
HA 430 DATA 80D7D5F59597808080D2D6F292928
   08080D7D1F79497808080D7D1F79197808080D
   5D5F79191808080D7D4F79197808080,8233
IA 440 DATA D7D1F19191808080D7D5F79597808
   080F7C5F595F78080000000000000000000000
   000000000000000000000000000000000,4039
HB 450 DATA -1,490
ZK 460 DATA 00000000000000000000000000000
   00000000000000000000000000000000000000
   000000000000000000000008080808080,640
VJ 470 DATA 8080FF01010101010101FFFF01010
   10101010180808080808080800000000000000
   0FFFF000000000000000000101010101,2575
GZ 480 DATA 01011C3E73737F7A3C3C387CCECEF
   E5E3C3C3C3C3F3F3F1F003C3C3CFCFCFCF80
   0000000FFFFFFFF003C3C3C3C3C3C,4775
WK 490 DATA 3C0000001F3F3F3F3C000000F8FCF
   CFC3C3C3C3C3C18000000000000E0F0F8FCFC7
```

continued ☛

SNAKES & LADDERS

```
   C3C1C0C040000007E427E427E427E42,3940
QB 500 DATA FE98E0800000000000000030F317E427
   E4200C0F08C7E427E427F1907010000000080F
   2C6F292F2808080F7C1F791F7808080,5370
KG 510 DATA F5C5F791F1808080F7C5F5D5F7808
   080F2C6F2D2F2808080F7C1F7D4F7808080F7C
   4F7D1F7808080F7C4F7D5F7808080F7,9351
IT 520 DATA C1F1D1F1808080F7C5F7D5F780808
   0F7C5F7D1F7808080F7959595978080080F2969
   29292808080F791979197808080F794,8395
CA 530 DATA 979197808080F794979597808080F
   795979597808080F795979197808080F7D5F5D
   5F7808080F2D6F2D2F2808080F7D1F7,8305
UF 540 DATA D4F7808080F7D1F7D1F7808080F5D
   5F7D1F1808080F7D4F7D5F7808080F7D5F7D5F
   7808080F7D5F595F78080FF80F2D6F2,9464
GG 550 DATA 92F280FF80F7D1F794F780FF80F7D
   1F791F780FF80F5D5F791F180FF80F7D4F791F
   780FF80F7D4F795F780FF80F7D1F191,9780
OE 560 DATA F180FF80F7D5F795F780FF80F7D5F
   791F780FF8097B595959780FF0070505050700
   00000000000000000000000000000000,5604
HG 570 DATA -1,490
MX 580 DATA 00000000000000000000000000000
   00000000000000000000000000000000A9098
   50AA97C850B60A9008D2F02A9098502,1526
ZP 590 DATA A97C8503A9028509A9008D06068D1
   4068D13068DAC068DAD068D04068D05068D0C0
   68D43068D57068D58068D44068D0F06,3558
GV 600 DATA 8D10068D11068DAE068DAF068DB00
   68DB1068DB2068DB3068DB4068DB5068D5F068
   D60068D69068D6A068DB8068DB9068D,4717
VB 610 DATA C3068DC406A06B203F87A9268D026
   4A9AF8DBB06A9AD8DBC06A9108DBD06A9208DB
   E06A9308DBF06A9408DC006AD06060A,5227
UJ 620 DATA 0A186D06060AA818690A8D0706A96
   5998506C8C8CC0706D0F4EE0606AD0606C904D
   0D9A9DF8D84068D8E068D98068DA206,4890
BE 630 DATA A9CB8D86068D90068D9A068DA406A
   9E08D88068D92068D9C068DA606A9F38D8A068
   D94068D9E068DA806A9DE8D8C068D96,5722
SY 640 DATA 068DA0068DAA06A97A8DC402A9168
   DC502A9CA8DC602A90F8DC702A9058D0D06A90
   18D0E068D12068D1506A9008D3002A9,4556
OJ 650 DATA 648D3102A9688D07D4A9038D1DD0A
   003A938997C06A9B8998006881 0F3A9308D610
   6A9508D6206A9908D6306A9B08D6406,5287
UE 660 DATA A9708D6506A9788D6606A9808D670
   6A9888D6806A98B8D6B06A003A9039908D0881
   0F8A9FF8D0CD0A9018D6F02A9018D6D,5465
GU 670 DATA 06A96B85CCA92085CBA000A9FF91C
   BA5CB186901C9C1F00585CB4CA37DA5CC18690
   1C970F00585CC4C9F7DA9008D6F068D,6247
QZ 680 DATA 7206A0F9A27DA907205CE4AD5F06D
   0FBEE6906CE6A06AD69068D0AD40D12D08D13D
   0AD6A068D14D08D15D04CD67DA90085,5867
FF 690 DATA 4DA9618D0002A9638D0102A9C08D0
   ED4A93E8D2F02AD5F06D018CEC002CEC102CEC
   202CEC302ADC0028D6906ADC2028D6A,5394
TN 700 DATA 06AD0506C9FAF006EE05064CB37EA
   9008D0506AD0264186914C962F0648D02644CB
   37EA9568D1E64A96A8D2164A9668D1F,5043
VI 710 DATA 648D2264AD14060A0A186D1406AAA
   000BD7E66997966E8C8C005D0F4ADC306F014A
   DC3061869018DC306ADC40669008DC4,5254
NH 720 DATA 064C62E4ADC406C904F0034C7F7EA
   062A2E4A907205CE4A9FF8DFC024C097CA9268
   D0264AD7206C901F00CC902F092AD6F,5834
GF 730 DATA 06F0064C037F4CA482AD6006F0034
   CF487A9068D1E64A9668D1F648D2264A91A8D2
   164A007B961069900D08810F7ADAD06,5101
AP 740 DATA F0034C7087ADFC02C9FFF0034C668
   74C62E4AC1406B97C069900D0207E88AD1306F
   00FAD1406F00DAD1506CD1306F00590,5299
SB 750 DATA 034CA888A9008D1606AD1106F0034
   C6480A9668D1F648D2264A92E8D1E64A9428D2
   164AD14060A0A186D1406AAA000BD7E,4300
ER 760 DATA 66993566E8C8C005D0F4AD4006F00
   34C3D83AD5406F0034C0D8520897F4C62E485C
   B86CC84CDA000A96885CEB1CD91CBC8,6384
NK 770 DATA C008D0F760AD0F06CD0E06F031AD1
   006D012AD0D061869FC8D00D2A9888D01D2EE0
   F0660ADBB068D01D2ADBC068D03D2A9,5424
JJ 780 DATA FF8D00D2A9FD8D02D2EE0F0660EE1
   206A9008D0F068D00D28D01D2AD0D06C91DF04
   CAD0D061869048D0D06AE1606AC0D06,4648
UI 790 DATA 988D3C66C8988D3D66C8ADB806D00
   C989D5066C8989D51664C0A80989DF066C8989
   DF166AD1006F021CEBB06CEBC06AD0E,6248
HN 800 DATA 06186905C942F0278D0E0660A2058
   E0D06A9018D12064CD77FADB806F00160AE1FD
   0E006F00160A2018E10064C0F80A900,4419
KB 810 DATA 8D02D28D03D28D0C06A9018D0E068
   D1106A9AF8DBB06A9AD8DBC0660AC1406B97C0
   69900D0A9928D1E64A9668D1F648D22,4990
YM 820 DATA 64A0A6ADB806F002A0F68C2164AD1
   4060A0A186D1406A8A200B97E669D9966E8C8E
   005D0F4AD1206186902A8ADB806F006,5461
OR 830 DATA 8C08674CB3808CB866A07EAE1406B
   DAE06D007BDB20618697CA88CA466ADB806D00
   7AE7802E00FF040AD0B06C90AF00CA9,5569
XW 840 DATA 00AA201382EE0B064C62E4A9008D0
   B06AC1406B9AE06F0034CA681AC1406B9B206F
   00CADB806D019E00BF0154C1381ADB8,5004
MR 850 DATA 06D04EE007F04AA900AA2013824C6
   2E4A9C8A2AF201382AC1406B97C0638E910997
   C069900D0206C88B9840638E9029984,5283
DL 860 DATA 06C8B98406E900998406C8CCD606D
   0E8AC1406B97C06C938D0034C08824C2382A9C
   8A2AF201382AC1406B97C0618691099,5251
BM 870 DATA 7C069900D0206C88B984061869029
   98406C8B98406690099840 6C8CCD606D0E8AD7
   206F0034CBF82AC1406B97C06C9C8D0,5550
YV 880 DATA 034C08824C2382A97E8DA466ADB80
   6D007E00EF0034C62E4A9C8A2AA201382AC140
   6A90099AE06B9B206F008A90099B206,5326
BE 890 DATA 4CD881A90199B206209588AC1406B
   9800638E910998006206C88B9840638E928998
   406C8B98406E900998406C8CCD606D0,5452
BK 900 DATA E8207E884C2382A901AC140699AE0
   64C23828D00D28E01D2AC1406B97C069900D06
   0AD120638E9018D12064C8082AD1206,4566
VV 910 DATA F0068D12064C62E4A9008D11068D0
   B068D0F068D0C068D10068DB806A9018D0E068
   D1206A9058D0D064CE982AD7206D01A,3915
QI 920 DATA EE1406EE1506AD1406C904F0034C6
   2E4A9008D1406A9018D15064C62E4AC1406B97
   C06C938F0034C2F82AC1406B98006C9,4638
AN 930 DATA 28F0034C2F82AD1206F03CA9018D7
   206AD7306C90AF00CEE7306A900AA2013824C6
   2E4A9008D73064C5D81AD120638E901,4718
BG 940 DATA F0068D12064C62E4A900AC140699A
   E068D72064C3A82A9028D7206A900AA2013824
   C62E4206C88B9840685CBB9850685CC,4988
RM 950 DATA A000B1CBC9D3F016C948F00FC949F
   00BC988F007C989F0034C5E824C0085206C88B
   98A0685CBB98B0685CCA000B1CBC9D7,6505
MJ 960 DATA B007C9D390034C5E82A9018D4006A
   9008D00D28D01D2AD4106D07A206C88B986068
   5CBB98706 85CCA000B1CBC9D7B00CC9,5814
TN 970 DATA D39008A9008D4A064CB783206C88B
   98C0685CBB98D0685CCA000B1CBC9D7D008A90
   18D4A064CB783206C88B9880685CBB9,5832
NG 980 DATA 890685CCA000B1CBC9D4D008A9028
   D4A064CB783A9008D4006AC1406B97C06C9C8F
   0034C5E82A90199AE064C5E82A9018D,5382
OC 990 DATA 4106AD4206C900F00EA9008D00D28
   D01D2EE42064C62E4A9008D4206AD4A06F00EC
```

SNAKES & LADDERS

```
   901D0034C6884C902D0034CB484A964,5040
PE 1000 DATA 8D00D2A9AF8D01D2209588AC1406
   B9800638E901998006207E88AD43061869018D
   4306C908F0034C62E4206C88B9840638,4851
SQ 1010 DATA E914998406C8B98406E900998406
   C8CCD606D0E8A9008D41068D4306AD4406C901
   F006EE44064C62E4A9008D4406AC1406,5241
UP 1020 DATA B9B206F00BA900AC140699B2064C
   6584A901AC140699B2064C62E4A9C88D00D2A9
   AF8D01D2AC1406B97C0638E901997C06,5242
ML 1030 DATA AD43061869018D4306C908F0034C
   62E4206C88B9840638E901998406C8B98406E9
   00998406C8CCD606D0E8A9008D41068D,5257
RM 1040 DATA 43064C62E4A9C88D00D2A9AF8D01
   D2AC1406B97C06186901997C06AD4306186901
   8D4306C908F0034C62E4206C88B98406,4860
AO 1050 DATA 186901998406C8B98406690099 84
   06C8CCD606D0E8A9008D41068D43064C62E4A9
   00AC140699AE06A9018D5406AD5506F0,5006
NS 1060 DATA 034C0186206C88B9840685CBB985
   0685CCA000B1CBC950F00FC952F00BC990F007
   C992F0034C3C854CF485206C88B98A06,5929
TG 1070 DATA 85CBB98B0685CCA000B1CBC94AF0
   27C94BF023C94DF01FC950F01BC952F017C98A
   F013C98BF00FC98DF00BC990F007C992,7016
RO 1080 DATA F0034C8085A9008D5E064CFC85AD
   5E06C902D0034CB685206C88B98C0685CBB98D
   0685CCA000B1CBC94CF00FC94EF00BC9,5944
KV 1090 DATA 8CF007C98EF0034CB685A9018D5E
   064CFC85AD5E06C901D0034C62E4206C88B988
   0685CBB9890685CCA000B1CBC94CF017,6008
ZL 1100 DATA C94FF013C951F00FC98CF00BC98F
   F007C991F0034C62E4A9028D5E064CFC85A900
   8D54064C5E82A9018D5506AD5606C900,5691
CT 1110 DATA F00EA9008D00D28D01D2EE56064C
   62E4A9008D5606AD5E06F00EC901D0034CA786
   C902D0034CF386A9C88D00D2A9AF8D01,5650
FU 1120 DATA D2209588AC1406B980061869019 9
   8006207E88AD57061869018D5706C908F0034C
   62E4206C88B98406186914998406C8B9,4663
PW 1130 DATA 84066900998406C8CCD606D0E8A9
   008D55068D5706AD5806C901F006EE58064C62
   E4A9008D5806AC1406B9B206F008A900,5070
MI 1140 DATA 99B2064C62E4A90199B2064C62E4
   A9648D00D2A9AF8D01D2AC1406B97C0638E901
   997C06AD57061869018D5706C908F003,5132
YI 1150 DATA 4C62E4206C88B9840638E9019984
   06C8B98406E900998406C8CCD606D0E8A9008D
   55068D57064C62E4A9648D00D2A9AF8D,5835
QT 1160 DATA 01D2AC1406B97C06186901997C06
   AD57061869018D5706C908F0034C62E4206C88
   B98406186901998406C8B98406690099,4422
YD 1170 DATA 8406C8CCD606D0E8A9008D55068D
   57064C62E485CB84CCA5CBF015A0009891CBA5
   CB18690185CBA5CC690085CC4C4387A6,6289
EG 1180 DATA CCE070F0034C478760A9FF8DFC02
   A9018DAD06AD6106F00638E9018D6106AD6206
   F00638E9018D6206AD6506F00638E901,5400
TM 1190 DATA 8D6506AD6606F00638E9018D6606
   AD6406C9F8F0061869018D6406AD6306C9F8F0
   061869018D6306AD6806C9F8F0061869,5121
LI 1200 DATA 018D6806AD6706C9D7F009186901
   8D67064C62E4A9008DAD06A9018D5F068D6006
   A003A9009908D08810F8A900A06B203F,4757
AF 1210 DATA 874C62E4A9BA8D1E64A9CE8D2164
   A9668D1F648D2264A224AD1306F007AD130618
   6902AA8EE066AD6E06C90AF01DEE6E06,5363
AO 1220 DATA A9008D00D28D01D2AD8402D00AA9
   018D6F06A9008D5F064C62E4A9008D6E06AD1F
   D0C905F0034C62E4A9FA8D00D2A9AF8D,5582
NQ 1230 DATA 01D2AD1306186901C905F0068D13
   064C62E4A9008D13064C62E4AD14060A0A186D
   14060AA818690A8DD60660AD1506AA0A,3828
NE 1240 DATA 0A0AA8CABD8006488A18696CAA68
   20737F60AC1406B98006489818696CAA68A000
   20737F60AD1306D01DADFC02C9FFF016,5166
CW 1250 DATA A9008D00D28D01D28D02D28D03D2
   A9FF8DFC024C9D7EAD1106F0034C6480AD4006
   F0034C3D83AD5406F0034C0D85A9018D,5293
VQ 1260 DATA B806A9668D1F648D2264A92E8D1E
   64A9E28D2164AD14060A0A186D1406AAA000BD
   7E66993566E8C8C005D0F420897FAD11,5163
US 1270 DATA 06F0034C62E4ADB906C901F006EE
   B9064C62E4A9008DB906AD0AD2C901B0034C62
   E4C90590034C62E4A9018D10064C62E4,5461
WU 1280 DIM A$(98),H(22):DATA 0,1,2,3,4,5
   ,6,7,8,9,0,0,0,0,0,0,0,10,11,12,13,14,
   15
PK 1290 RESTORE 1280:FOR I=0 TO 22:READ A
   :H(I)=A:NEXT I:TRAP 1370:ADD=25441:LN=
   10
WA 1300 RESTORE LN:READ A$:IF LN<>PEEK(18
   4)*256+PEEK(183) THEN POKE 559,34:? "L
   INE ";LN;" MISSING!":END
WF 1305 POSITION 10,10:? "CHECKING LINE "
   ;PEEK(184)*256+PEEK(183)
CT 1310 IF A$="-1" THEN GOTO 1380
VS 1320 FOR I=1 TO LEN(A$) STEP 2:B=ASC(A
   $(I,I))-48:B1=ASC(A$(I+1,I+1))-48:B2=H
   (B)*16+H(B1):POKE ADD,B2:CK=CK+B2
LW 1330   ADD=ADD+1:NEXT I
OA 1340 READ CKS:IF CK=CKS THEN CK=0:LN=L
   N+10
XS 1350 IF ADD=35143 THEN POKE 559,34:GOT
   O 1390
OW 1360 GOTO 1300
HJ 1370 POKE 559,34:? "BAD DATA! AT LINE
   ";LN:END
AQ 1380 READ LE:ADD=ADD+LE:LN=LN+10:GOTO
   1300
KN 1390 ? CHR$(125):? "DATA CHECKED - (D)
   ISK or (C)ASSETTE?"
SU 1395 GOTO 1395*((PEEK(764)<>58) AND (P
   EEK(764)<>18))+1400*(PEEK(764)=58)+150
   0*(PEEK(764)=18)
WQ 1400 REM **BOOT DISK SUBROUTINE**
JA 1410 DATA 255,255,97,99,70,137,226,2,2
   27,2,0,124
SH 1420 RESTORE 1410:FOR I=0 TO 5:READ A:
   POKE 25435+I,A:NEXT I:FOR I=0 TO 5:REA
   D A:POKE 35143+I,A:NEXT I
ZS 1430 ? "K":? "INSERT DISK WITH DOS FIL
   ES":? "& PRESS ANY KEY TO CONTINUE":OP
   EN #1,4,0,"K:":GET #1,K:CLOSE #1
JA 1440 ? :? "WRITING AUTORUN.SYS FILE...
   .":OPEN #2,8,128,"D:AUTORUN.SYS"
IS 1450 POKE 872,242:POKE 873,37:POKE 868
   ,91:POKE 869,99:POKE 866,11:X=USR(ADR(
   "h▣ LV◘"))
UB 1460 ? :? "FINISHED.":END
GL 1500 REM **BOOT CASSETTE ROUTINE**
JS 1510 DATA 0,76,83,99,94,99,169,60,141,
   2,211,76,0,124
MR 1520 RESTORE 1510:FOR I=0 TO 13:READ A
   :POKE 25427+I,A:NEXT I
AT 1530 ? "K":? :? "INSERT BLANK TAPE":?
   "THEN PRESS PLAY & RECORD":? "& HIT AN
   Y KEY TO CONTINUE."
ON 1540 OPEN #1,4,0,"K:":GET #1,K:CLOSE #
   1:? :? "PRESS ANY KEY AFTER TONE.":OPE
   N #2,8,128,"C:"
LO 1550 ? :? "WRITING BOOT CASSETTE....."
   :POKE 872,244:POKE 873,37:POKE 868,83:
   POKE 869,99:POKE 866,11
MH 1560 X=USR(ADR("h▣ LV◘")):? :? "FINISH
   ED.":END
```

WRITING ADVENTURES

I love playing adventures, or role-playing fantasy games. There are many available for the Atari 8-bit computers, commencing with Scott Adams' Adventure series to the recent sophisticated offerings from Level 9, Infocom and Sierra On-line.

Adventures permit the player to take the part of a hero, a villain or an explorer, and investigate new worlds, limited only by the imagination of the adventure writer. Adventures have been played between people, with one acting as the referee, or 'dungeonmaster', or in books, where the next page you read depends on the answer you give to a posed question. But it is the microcomputer which has made adventures available to all, taking on the role of the dungeonmaster and leaving the player free to concentrate on solving the game.

The major problem for the owner of an Atari 8-bit computer is the sad disappearance of the biggest names from programming adventures for their machines. The original adventures by Scott Adams - formerly a series of twelve - are now available with difficulty, although New Atari User is still selling some of the disk versions. Level 9 has pulled out of the Atari 8-bit market, while Infocom appears to have been broken up (New Atari User, Issue 46, Oct. 1990). Consequently few new adventures are being written for Atari owners.

My reason for writing this, the first of four articles, is to encourage other readers to take up the programming of adventures so that I may play more of them. Writing adventures is, in outline, quite simple and these articles are intended to encourage wider dissemination of the techniques. The most important requirement for the programmer is imagination. It is a great pity that so many adventures seem to involve killing dragons in underworld caverns.

It is a characteristic unique to adventure writing that the programmer cannot benefit from his own creation. Having created the puzzles, the programmer can have no interest in solving them since he already knows the answers. It follows that I cannot solve the problem of my own addiction to adventures by creating new ones of my own. You, dear reader, must make your adventures and try to sell them to people like me!

This four part series therefore will describe the writing of a complete adventure called "MetMan", and will comprise the following:

Part 1: Outline of adventure programming. Method of creating rooms.

Part 2: The Parser. Descriptions and Help text. Moving articles around.

Part 3: The full listing of the adventure "MetMan", written by me, with a few additional notes. The solution to the adventure (coded so as to be difficult to read accidentally).

Part 4: Improvements to the program. Screen display. Data compression. Discussion of programming aids and other odds and ends.

TYPES OF ADVENTURER

The adventurer typically falls into one of two classes. Firstly, the player may be involved directly as in "You are standing before a waterfall. You see the sun reflecting on a bright stone."

Alternatively, the player may command a puppet: "I am standing before a waterfall. I see the sun reflecting on a bright stone."

It is purely a matter of personal taste as to which approach the programmer adopts. I myself prefer the control of a puppet: disasters don't seem so painful!

THE QUEST

The adventurer always has to fulfil a quest. It may be to find a treasure, to rescue a princess or simply to escape alive. The quest for "MetMan" is given at the end of this article.

TYPES OF ADVENTURE

Three types of adventure can be distinguished.

1. Arcade Adventures

These take place in real time. The adventurer moves a puppet with a joystick through screen representations of different rooms. Periodically the puppet gets chased around by other moving characters; occasionally the puppet opens a treasure box by moving onto it.

Arcade adventures can be great fun - the best known for the Atari 8-bit machines is probably Quality Software's "Ali Baba and the Forty Thieves", which sadly is not compatible with the XE models. It is possible to buy a program in ROM called "Adventure Creator" from Spinnaker Software (available from Gralin International, who advertise in New Atari User, £15)

S

by John White

Part 1 of a series which explains everything you need to know to write your own adventures

which greatly simplifies the creation of this type of adventure. Tony Bridge's book "Atari Adventures" (Sunshine Publications) also contains a lengthy tutorial about writing arcade adventures, complete with an illustrative program.

A modern variant of arcade adventures can be seen with some of the high speed, high resolution graphics computers, where a wonderfully animated character traverses beautifully illustrated background scenery, stopping occasionally to examine items. Unfortunately with these games, once you have finished marvelling, what are you left with? A sprite moved by a mouse to click onto a screen location. And you've paid for all those very elaborate graphics.

This series of articles does not address the programming of 'arcade adventures'.

2. Text Adventures

Text adventures are my favourite. The human imagination supplies all the illustration which is required, while descriptions of the rooms which you are in can be, according to the programmer's taste, terse or verbose. The player is given a description of the room and its articles, a list of the ways out and a prompt:
WHAT DO I (YOU) DO NOW?
The player then types in his response, such as "EXAMINE WATERFALL".

The means by which the program handles the player's input is called the Parser, and can be simple or complex. This will be dealt with in the next article.

"The Quill" was a machine code program released many years ago for the Sinclair Spectrum and some other microcomputers. It enabled the user of the program to create text adventures quite readily once the adventure had been designed on paper. Consequently, it enabled the adventure writer to concentrate on the game itself, rather than on its implementation.

Adventures written with "The Quill" were at one time commercially very successful for the Spectrum, but similar text-writing programs do not appear to be available for the Atari 8-bit computers.

3. Text Adventures with Graphics

A number of text adventures are enhanced by the addition of graphics at key moments. For example, you enter a room, your disk drive clanks into life, and a picture of the room with a fire-breathing dragon appears. Adventure programs enhanced in this way include such old stalwarts as the Scott Adams' adventures and some of Level 9's offerings.

Again, this is very much a matter of personal taste. I don't like having my mental picture ruined by the artist's imagination, I don't like waiting for the picture to down-load from disk and I don't like the thought of having to pay for the artist's labours. Therefore, this series does not address the problems of adding pictures to an adventure.

TIMER

Adventures can be improved by the introduction of some type of time control, so that part, or all, of the adventure has to be completed within a fixed time period.

Real-time clocks can be used for arcade adventures, but these are not suitable for text adventures where the player expects to be able to sit and think about a problem before moving on. In the latter case, time appears to run out after every action that is taken. The classic example of this occurs when an oil lamp, or torch, begins to run out after (say) 50 turns of use. Usually the player will be advised of the impending demise of the lamp. "MetMan" implements the latter type of time control, and the player has to complete the whole adventure within 100 turns. However, a method exists to increase the number of turns allowed (I'll leave the reader to find out how!).

Now let us move on to look at programming requirements in more detail.

THE PROGRAMMING LANGUAGE

Speed is definitely an advantage for a computer adventure program. No player likes to have to wait for a response to an action, so the code should be made as fast as possible.

The worst culprit for slowing an adventure down is the

parser. Improvements here will be discussed further in the next article.

It is not surprising that many commercial adventures are written in machine code. This provides the speed, it provides efficient use of computer memory and it provides some protection against prying eyes. However, machine code is not essential.

Since this series is intended as a tutorial, the "MetMan" adventure has been written substantially in Atari Basic. A little machine code has been added to help with the parser. This provides a program which runs at an acceptable speed.

The public-domain program 'Turbo Basic' (available on disk from New Atari User) runs about three times faster than Atari Basic, while compiled Turbo Basic programs run about ten times faster than Atari Basic; a gain in speed which is well worth having.

For this reason, "MetMan" has been written in a way which is compatible with Atari Basic, Turbo Basic and compiled Turbo Basic. The compiled version appears to be almost as fast as a 'proper' machine code adventure.

There are some complications in the code caused by the need to reconcile three versions. Difficulties with the Turbo Basic compiler will be discussed in article 4 of this series, but meanwhile the reader is asked to be patient with what may appear to be some eccentric Basic programming, caused by the need to accommodate the Turbo Basic compiler.

One obvious difference between versions arises from the parser. Turbo Basic and its compiler have a command called INSTR, which finds the location of a small string in a larger one. Atari Basic lacks this valuable feature. Therefore, the parser of "MetMan" contains a machine code routine which almost exactly mimics the INSTR command in Turbo Basic.

APPEARANCE AND VERBOSITY OF PROGRAM

For tutorial purposes, the adventure will use a simple scrolling text screen, with each room being re-described after every action taken in it. Similarly, the descriptions of the rooms will be comparatively sparse to save computer memory and a great deal of typing.

Professional ways of improving the appearance of adventure programs, and of making room descriptions as verbose as those of Level 9 (using data compression techniques) will be described in article 4.

It is important to realise that good adventures do not need hundreds of rooms and pages of room descriptions. Level 9's programmers gave a fascinating interview in New Atari User (Issue 34, August 1988) where they acknowledged that adventurers are getting tired of globe-trotting and map-drawing around huge dungeons. Most people prefer limited movement and puzzle solving.

It is worth recalling that Scott Adams' first masterpiece, "Adventureland" - still my favourite adventure - had only 29 locations and a simple parser.

GENERAL DESIGN OF AN ADVENTURE

Puzzles must be solvable with common sense or limited knowledge. Help text, in the form of a clue, should be given where difficulty may be encountered. All this may sound obvious, but it is surprising how much knowledge some adventure writers tend to assume. Not everyone knows that garlic keeps vampires at bay.

Mazes should be barred from all adventures. They appear to have originated with 'Colossal Adventure', one of the first adventures ever written for a computer, which had "twisty little passages" and "little twisty passages". Mazes cause the adventurer frustration, but never seem to serve any useful purpose.

TESTING

It is essential to have an outsider test a completed adventure in order to check for unexpected actions or errors.

My wife played through all of "MetMan" without mishap. However, a friend was misled by the statement 'Enter two-word commands' and tried unavailingly to GO NORTH instead of typing NORTH or N. The "MetMan" adventure was accordingly modified to take account of this hitherto unsuspected problem; proof of the necessity for independent testing.

GENERAL STRUCTURE OF AN ADVENTURE

It is very important for anyone considering writing adventure programs that their adventures should fit around a general structure or pattern, which can easily be changed from one adventure to the next.

It is possible to write a single adventure as a series of IF statements, for example:

IF you are are under the waterfall,
and IF you are carrying an umbrella,
and IF you say the magic word
THEN the waters will part,

but this is extremely inefficient to code, slow to implement and impossible to adapt to a new adventure. You tend to see this kind of adventure in program listings in magazines!

Scott Adams wrote a general structure for his adventures, so did Level 9 and doubtless many others, and so have I for "MetMan".

PROGRAM STRUCTURING

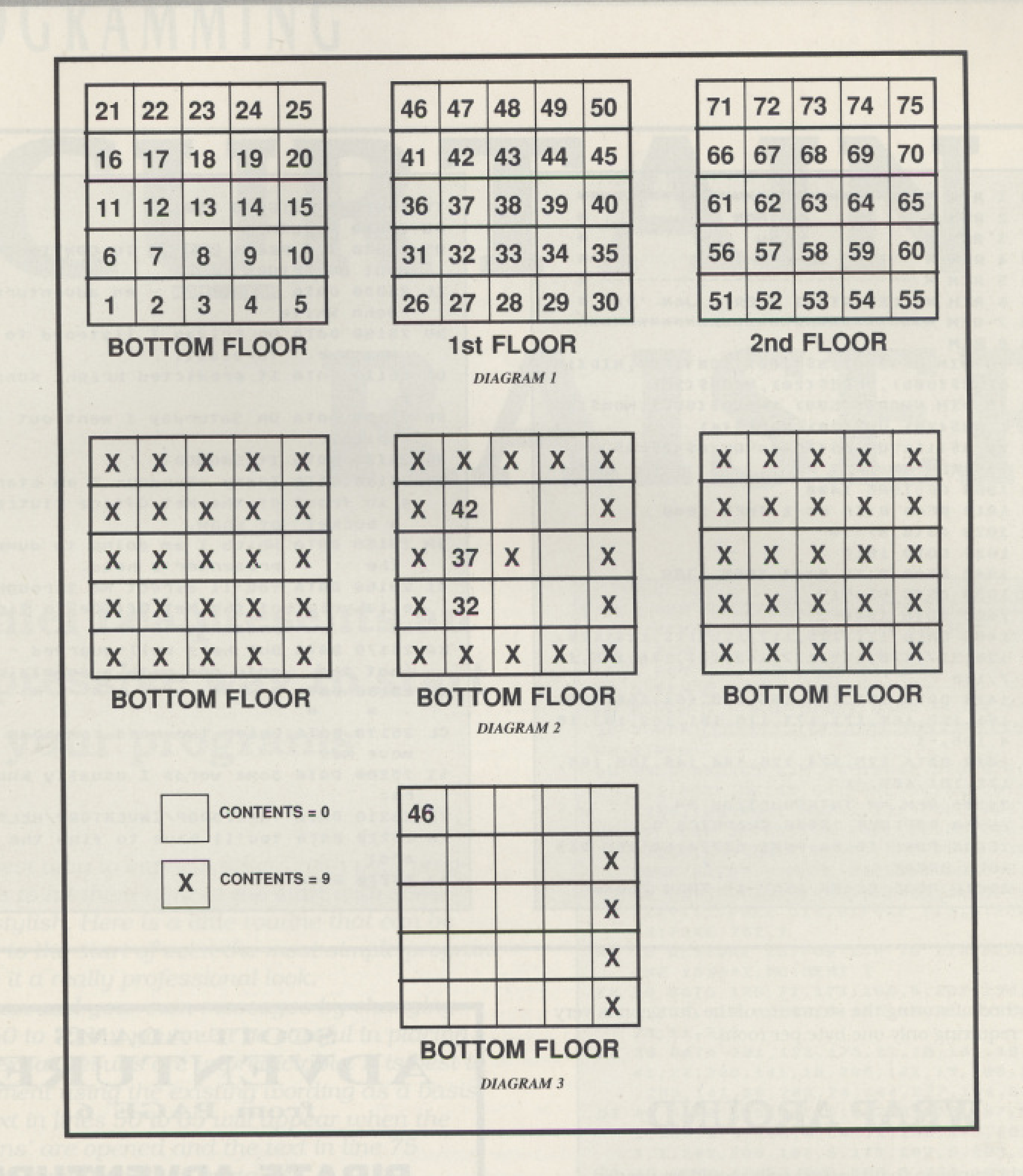
All computer programs should be structured. 'Structured' is a horrible buzz word with no defined meaning - I once read a book about Structured Programming which never once told the reader what 'structured' meant - so I shall furnish my own definition.

"MetMan" is a structured program because every programmable action, including initialisation, is included in its own subroutine called by a main routine. Contrary to what some people would have you believe, there is no logical reason why GOTOs should not be used within a subroutine (but not to jump from one subroutine to another, which may cause problems with the RETURN stack).

'Top-down' programming would mean that I wrote the main routine first, supplying all the detailed code subsequently in the subroutines.

'Bottom-up' programming would mean that I wrote all the detailed code first in different subroutines reserved for every action. Then I would have written the main, calling routine.

"MetMan" will be discussed as a 'bottom-up' program.



SETTING UP

Now we turn to the nitty-gritty of programming.

It is not necessary to use a three-dimensional array to record the contents of a three-dimensional building, or dungeon (in fact, you cannot use more than two dimensions with Atari Basic anyway).

Instead, the programmer draws his map something like that shown in Diagram 1.

Each floor is numbered as shown (the floors must match each other in shape and size, but need not be squares).

Consider a puppet standing in cell 37 on the 1st floor. If we add 5 to his cell location, he will move north. Subtract 5 to move south, -/+ 1 to move west or east. Addition of 25 (the size of the floor) takes the puppet up to the 2nd floor, subtraction of 25 takes him down to the bottom floor.

How does the program know if these moves are legal? If the new room is a wall (or floor, or ceiling) it will carry a value of (say) +9, and this will be counted as impassable. Thus the test for a legal move is:

IF (Present pos. + Move value) <> 9 THEN legal move

In order to create the rooms of the dungeon, then, a lot of the cells are blocked in with a value of 9. If all the bottom and 2nd floor cells are blocked in, the puppet can never go up or down.

Diagram 2 shows a valid dungeon.

The puppet in cell 37 could only ever move to squares 42 and 32 in one turn. All other move options are blocked.

Similarly, when the puppet enters cell 37, the program will give a room description for cell 37, then will test for legal moves, north, south, west, east, up and down, finally announcing:

EXITS ARE NORTH (+5) AND SOUTH (-5)

This is how the rooms would originally be set up in memory:

```
ROOM$ = "9999999999999999999999999" : REM bottom floor
ROOM$(LEN(ROOM$)+1) = "9999990009909099000999999" : REM 1st floor
ROOM$(LEN(ROOM$)+1)= "9999999999999999999999999" : REM 2nd floor
```

Thus, cell 36 has a value of 9, being a wall, while cell 37 has a value of 0, being an accessible room.

The cells can also assume values of 1 to 8, which can be interpreted in any way the programmer thinks fit. For example, a cell value of '1' might indicate an unlit room, for which a lamp would be needed. The letters A-Z and a-z can also be used - in fact, I have used the letter 'Q' instead of '9' in "MetMan" - while programmers in machine code have even more options at their disposal, since each cell could be assigned any value of 0 to $FF.

```
WO 1 REM ******************************
UF 2 REM *          METMAN            *
RT 3 REM *            by              *
DH 4 REM *        John White          *
SR 5 REM * -------------------------- *
CG 6 REM *  NEW ATARI USER - JAN '91  *
WU 7 REM ******************************
NN 8 REM
OG 10 DIM A$(300),B$(100),CON(100),HID(10
   0),C$(500),VERB$(20),NOUN$(20)
QP 15 DIM VWORD$(500),NWORD$(500),MON$(25
   ),NN$(20),VV$(20),CODE$(4)
FV 20 A$(1)="0":A$(300)="0":A$(2)=A$
XH 999 REM ** INIT **
JA 1000 RESTORE 1400
CN 1010 READ B:IF B=-1 THEN 1040
LY 1020 A$(B,B)="0"
NK 1030 GOTO 1010
BR 1040 READ B:IF B=-1 THEN 1300
MW 1050 A$(B,B)="1"
PG 1060 GOTO 1040
IH 1400 DATA 112,115,117,122,123,124,125,
   126,127,128,132,137,142,143,144,146,14
   7,148
ME 1410 DATA 151,152,155,158,161,164,165,
   166,167,168,171,172,176,181,182,183,18
   4,185,-1
HB 1420 DATA 125,124,126,144,146,155,165,
   172,181,185,-1
EZ 24999 REM ** INTRODUCTION **
BA 25000 RESTORE 25000:GRAPHICS 0
BO 25005 POKE 16,64:POKE 53774,64:REM DIS
   ABLE BREAK
SF 25010 READ C$:IF C$="-1" THEN 25030
```

```
TY 25020 ? C$:GOTO 25010
DU 25030 RETURN
HS 25040 ? " PRESS RETURN TO CONTINUE";:I
   NPUT B$:RETURN
ZL 25090 DATA MET - MAN - An adventure by
    John White
UV 25100 DATA On Friday I listened to the
    weather   forecast.
OC 25110 DATA It predicted bright sunshin
   e.
RK 25120 DATA On Saturday I went out for
   a picnic.
QD 25130 DATA It SNOWED!
YZ 25140 DATA Today -Sunday- I am standin
   g in front of the Met Office clutching
    a bucket  of snow.
SW 25150 DATA Which I am going to dump on
    the       presenter's head.
QI 25160 DATA You'll direct me through th
   e labyrinthof the Met Office to find t
   he         presenter.
KA 25170 DATA But he's well-guarded - I'm
    not the   only one with a complaint.
GR 25180 DATA *    *    *    *    *    *
       *    *
CL 25190 DATA Enter two-word commands to
   move me.
SI 25200 DATA Some words I usually know a
   re:
YZ 25210 DATA TAKE/DROP/INVENTORY/HELP
YH 25220 DATA You'll have to find the oth
   ers!
DJ 25230 DATA ,-1
```

This method of storing the structure of the dungeon is very efficient, requiring only one byte per room.

WRAP AROUND

One might suppose that blocked cells would be needed around each edge of a floor, to prevent the puppet stepping out of a floor into space. Actually, this is not so, owing to the wrap-around phenomenon.

If you remove the blocked cell rims of three sides of the 1st floor, creating 12 extra rooms (see Diagram 3), the puppet still cannot legally move out of the string array. Try standing in cell 46 and adding +1, -1, +5, -5, +25, -25: only moves east and south are permitted, the other cells being blocked.

This trick makes more rooms available for a given floor size.

TYPING IT IN

For those who want to start typing in "MetMan" now, enter the lines shown in the accompanying program which set up the rooms of the labyrinth (using A$ instead of ROOM$).

Then type in the further lines 25000 - 25230, which describe the quest of the adventure. Include all the spaces as shown. A full listing of the program will be given in article 3.

Next issue I will look at how to accept input from the user and show how objects can be introduced to these rooms. In the meantime you might like to start planning some locations that can be used in your own adventure.

A CURTAIN RAISER

Daniel Lea presents an impressive way to start off your programs

The best way to impress others with your programs is to hit them right at the start with something stylish. Here is a little routine that can be added to the start of even the most simple program to give it a really professional look.

You can add your own messages by changing lines 50 to 75 but you must be careful in placing your text as results are unpredictable. It is best to experiment using the existing wording as a basis. The text in lines 50 to 65 will appear when the 'curtains' are opened and the text in line 75 appears over the initial 'curtains'.

The routine will exit to a normal Graphics 0 screen but several memory locations are not cleared so if you want to use Player Missile Graphics or page 6 it is essential that they are cleared first. Check the various locations that were POKEd at the beginning (a copy of Mapping The Atari is going to be handy here) to determine what they should be reset to. One way to do this would be to PEEK these locations before you load and run the program so that you can POKE back the original values before running your part of the program. An alternative way of using this routine would be as an opening title which would then load another program from disk.

We would be happy to receive any improvements on this idea or amendments to the program to make it more user friendly.

```
HW 1 REM ************************************
TB 2 REM *       A CURTAIN RAISER           *
UH 3 REM *              by                  *
LG 4 REM *          Daniel Lea              *
MS 5 REM * -------------------------------- *
WH 6 REM *   NEW ATARI USER - JAN 91        *
IC 7 REM ************************************
NN 8 REM
DQ 10 GRAPHICS 2:? "↖":POKE 559,0:POKE 62
   3,1:POKE 53248,64:POKE 53249,96:POKE 5
   3250,160:POKE 53251,128:POKE 709,15
WP 15 POKE 53261,255:POKE 53262,255:POKE
   53263,255:POKE 53264,255:POKE 53256,3:
   POKE 53257,3:POKE 53258,3:POKE 53259,3
FH 20 P1=PEEK(560)+256*PEEK(561):POKE P1,
   128+112:POKE 512,0:POKE 513,6:POKE 710
   ,0:POKE 752,1
RG 25 RESTORE 25:FOR I=0 TO 110:READ MC:P
   OKE 1536+I,MC:NEXT I
ZX 30 DATA 120,72,173,108,6,201,194,176,1
   1,173,110,6,240,6,165,20,41,1,208,31,1
   73,11,212
HZ 35 DATA 201,123,176,22,10,141,10,212,1
   41,22,208,141,18,208,141,19,208,141,21
   ,208,141,20,208,24,144,227,104,64,173
UI 40 DATA 106,6,141,0,208,173,107,6,141,
   1,208,173,108,6,141,2,208,173,109,6,14
   1,3,208,206,107,6,173,107,6,205,106,6
IO 45 DATA 176,3,206,106,6,238,109,6,173,
   109,6,205,108,6,144,3,238,108,6,24,144
   ,170,64,96,160,128,1
PR 50 ? #6;"  DANIEL LEA'S     "
GQ 55 ? #6;" AMAZING      CURTAIN OPENER "
VY 60 ? #6
FP 65 ? #6;"  ADDS SPARKLE  TO YOUR PROGR
   AMS"
HG 70 POKE 1646,0
WP 75 ? "↑   NEW ATARI USER PRESENTS"
ZX 80 POKE 54286,192:POKE 559,33
BO 85 FOR DELAY=1 TO 500:NEXT DELAY:REM D
   ELAY BEFORE CURTAINS OPEN
IK 90 ? "↖":POKE 1646,1:POKE 709,0:FOR I=
   0 TO 500:NEXT I:REM DELAY BEFORE ROUTI
   NE ENDS
YF 95 CLR :GRAPHICS 0:POKE 53277,0:POKE 5
   59,34:POKE 623,4
```

AMAZING MAZES

***WARNING:* This article reveals the solutions to many adventure game mazes!**

Mazes have fascinated mankind for millennia - the earliest recorded one being an Egyptian temple with 3,000 chambers, built by Amenemhet III around 2300 BC! The most famous labyrinth of ancient times was of course the Cretan one wherein roamed the Minotaur - sadly it probably never existed. Mazes were drawn on the floors of French cathedrals in the middle ages and hedge mazes like the one at Hampton Court have been popular for centuries. In more recent times there have been countless puzzle books full of mazes and innumerable plastic puzzles requiring you to roll balls through mazes of coloured plastic.

It is not surprising then, that when Crowther and Woods produced the original Adventure in 1976 they incorporated a couple of mazes. Those immortal words, "You are in a maze of twisty little passages, all alike", obviously made a major impression on the world of adventure writers. For many years no self-respecting adventure was complete without a maze!

Those early mazes are easily solved provided you have enough items to drop one in each "room". (Regardless of whether they are actually rooms or parts of a forest or desert or whatever, I will call them "rooms".) Some basics you need to understand are: the route between two adjacent rooms can turn as in Fig 1. (starting in Room 1 and going East then West does NOT take you back to Room 1!); some routes are one-way only (e.g. climbing down a hole).

Mapping these early mazes involves just dropping an item in each room, then testing each route and drawing a map showing how the rooms all link together. This works OK for small mazes, but large ones which have the rooms joined together randomly can end up looking like spaghetti if you have one-way routes leading N, S, W, E, NW, SW, NE, SE, Up and Down (and sometimes even In and Out!) from each room.

The technique with more complex mazes is to draw a grid representing the links rather than actually trying to draw the maze. Draw a grid as in Fig 2., marking each room with an item and numbering each room as well. Then fill in the grid to show where each route leads from each room. Figure 2 shows a partially completed grid showing for example that going NE from Room 2 (where you have dropped a rope) takes you to Room 3 (where you have dropped a key).

Once you have mastered these techniques and solved a couple of mazes the standard maze becomes a little tedious, yet it occurs everywhere: the Desert in Sands of Egypt, the Trackless Desert (just stand still and the Worm won't bother you!) and Lost in the Forest in Adventure Quest, the Foothills in Emerald Isle (at least you don't have to drop items - there are Foothills, More Foothills, Tedious Foothills, Endless Foothills, Dull Foothills...), the Maize Field (Ha! Ha! What a CORNY joke!) in Return to Eden, the Hedge Maze in Lords of Time, the Opium Den in Granny's Place (made worse by the fact that some of the connections change randomly!), the Iron Passages in the Sphinx Adventure, the Rain Forest in Amazon, the Desert in the Amulet, the Desert in the Wizard and the Princess, aka Adventure in Serenia (there aren't enough items but the pictures allow you to differentiate), the Maze of Pits in Adventureland, the Maze of Caves in Pirate Adventure, the Coal Mine in Zork I and Sorceror; the list goes on forever!

Fortunately most authors soon realised that this was getting just a little bit boring and started adding extra twists to their mazes. Some are just jokes like the "maze of twisty synapses" inside your brain in the Hitchhiker's Guide to the Galaxy - you don't have to solve it, just dislodge your Common Sense; or the Irrelevant Maze in the Pawn - with a warning sign outside saying "This maze is totally irrelevant to the adventure", and it really is - this maze of "twisting passages" is completely random and unmappable but you can get out very easily just by typing LEAVE MAZE!

Others are twists on the standard maze, for example how do you map the tunnels in Arthur as a Badger when you can't carry anything? Simple, just make claw marks in the earth! Or the Black Rooms in Rick Hanson - these are nasty as there are 16 rooms and you only have 13 items - you CAN actually crack it with the grid method if you spend AGES on it, or you could just understand the sign at the entrance which says "Make NO SOUND in the Black Rooms". NO SOUND is actually the route through the maze (N=NORTH, O=OUT,etc)!

Some mazes are intentionally insoluble - you need help from someone. In the Warren in Starcross you must follow the chief. In the Mountains in Mindshadow you will almost certainly die in the Quicksand unless you find the map. In Arthur you cannot cross the Peat Bog without instructions from the peasant. In Bureaucracy you need the instructions from the computer to know that you must subtract the number of this Switchgear Room from the number of the last one you were in, then decode the answer to work out which direction to go in next - how obscure can you get!

Of course there is a completely different kind of maze in many of the graphically oriented games. Here it has to look real on the screen so the programmer can't tie all the locations together with spaghetti-like tunnels, and normally if you go North then South you get back to where you started! The whole of DungeonMaster is really just one big maze, and the same applies to most fantasy games - Asylum, Alternate Reality,

Dragons of Flame, Heroes of the Lance, Rogue, Wizardry, Bard's Tale, the Dungeons in all the Ultimas, and so on. These are made more complicated and interesting by the use of teleports, rotations, one-way routes, secret doors and other devious tricks to attempt to confuse you!

Arcade Adventures and Platform Games often require you to map areas (e.g. Shamus, Pitfall, Cadaver, Back to the Golden Age and countless others), but what interests me is the clever ways people have added twists to what appear to be standard mazes in text adventures. Magnetic Scrolls do it in the Guild of Thieves where the only way to cross the coloured squares is to realise that the sign WOBNIAR is RAINBOW backwards - you have to walk on the colours of the rainbow in reverse order, and in Fish! where which direction you move when In the Dimensions affects which routes exist out of the next room - most confusing! Level 9 do it in Worm in Paradise where, to use the Eden Transport System, you need to find the colour code of your destination, decode it to a number, convert it to tertiary, and interpret the result as a set of instructions to go E or W at certain times. Even when you understand it you need to write a program to work out the routes!

One of the nicest ideas was in Philospher Quest where you have to find your way out of a whale's stomach - unfortunately the whale tends to burp every few moves and throw you around randomly so mapping is impossible. The solution is to light a torch and see which way the smoke blows - head the other way and you will soon reach the blowhole!

My favourite mazes are Infocom's! (What? Me, biased? Nah!) Even in Zork I they added the twist of the thief picking up or moving your items! The next 5 Zorks all had interesting mazes:

Zork 2: You will wander forever around the Oddly Angled Rooms unless you realise that the wooden club marked "Babe Flathead", the wizard's gleeful "You'll never get to first base at this rate" and the fact that the window on the floor is a diamond are all clues pointing towards Baseball. All you have to do is get a "home run" by going SE, NE, NW, SW, to make the window glow and a trapdoor open!

Zork 3: The Royal Puzzle is not just a maze, it is a maze which you have to rearrange once you realise that it is made up of sandstone blocks which you can push around, though you are not helped by many marble pillars which are immovable.

Zork 4 (Enchanter): The Translucent Rooms are very easy to map and don't appear to go anywhere! But find the Magic Pencil and the Magic Map and you realise that the tunnels are actually identical to the lines on the map - you can use the pencil to add a line and reach another location - then you need to be very clever with your rubber and pencil in order to trap the demon while getting out yourself!

Zork 5 (Sorceror): This is a superb 3-D maze made of glass so that you can't see which directions are exits or whether the next room has a floor or not! You can use the IZYUK (limited flying) spell you learnt at the end of Enchanter to map part of it - but to complete it you will need to find out how to turn yourself into a bat with FWEEP! The beauty of this is that with the bat's radar you can now "see" the exits! As a further twist, you have to return through the maze hotly pursued by a Dorn Beast and just before you enter it all the panels slide to create a new maze!

Zork 6 (Spellbreaker): The Octagonal Room maze is quite small, but the main problem here is that there are no exits from any of the rooms! You have to use a magical artefact to create them - but you can only create one in any given compass direction - very clever!

Other Infocom's: The maze in Journey is nice - as soon as you drop an item to indicate that you know how to map a maze it shows you the way out! You don't have to map the enormous Hedge Maze in Hollywood Hijinx - just find the two halves of the map; mapping it yourself is completely pointless as you have to have the map to know where to dig! The Leather Goddesses of Phobos provides you with a map of the Catacombs in the games package but you will still never get out unless you also read the comic that comes with the game which tells you how to avoid death at the hands of the Canal Beetles, Sand Crabs, and 'Gators which infest the tunnels!

Perhaps the choice for my all-time favourite maze is the Airport in Bureaucracy - you will wander forever unless you ignore the signs and take the route that DOESN'T claim to lead to your destination!

Well I hope that you have enjoyed this trip through the amazing world of computer mazes and hopefully any adventure writers reading will take it all to heart and try and ensure that their next maze is INTERESTING! Meantime how about writing in to describe your favourite maze? And, in case you are wondering, there is no single machine on which you can play all the games mentioned above!

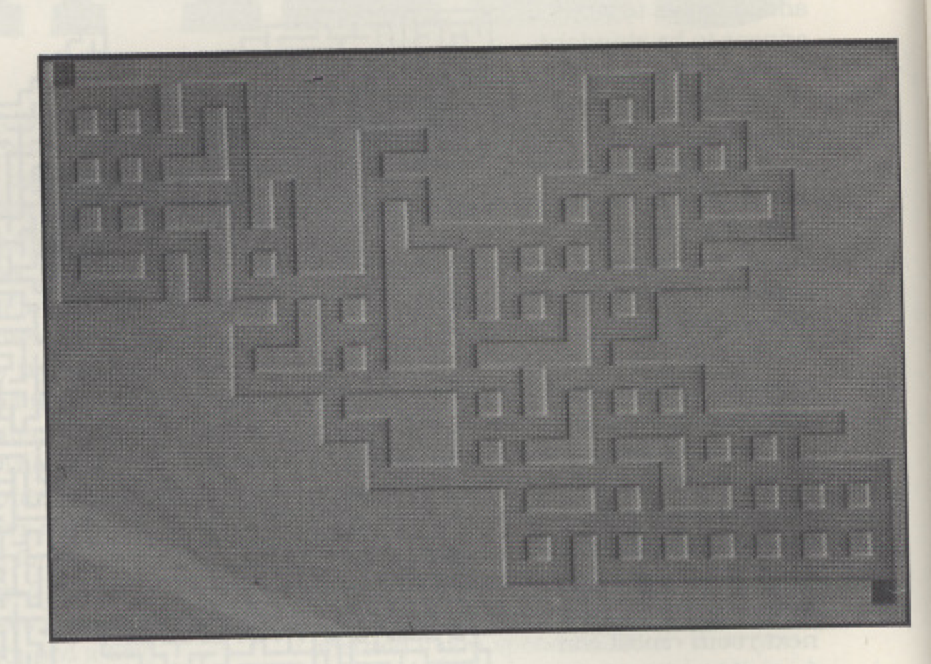
Explored by John Sweeney

MONSTER MAZE

Whilst a lot of young people enjoy machine code shoot 'em ups as much as the older Atari owners the youngest are quite happy with simple games that they can cope with easily and which can provide sufficient challenge along with the possibility of actually winning the game.

My children have been playing games on their Atari for several years and Monster Maze is still one of their favourites despite being a relatively simple game to write and play. I am sure that other children, and perhaps users of all ages, will find Monster Maze fun to play. The objective is simply to guide your player, a red dot, out of the maze before the monster, a blue dot, catches him. Simple but great fun.

The program is documented below so that you can understand what is going on and perhaps you will be able to improve the game. The version here is for one player against the computer but the disk for this Issue also contains a two player version in which one player controls the monster.-



by David Lamont

PROGRAM DESCRIPTION

Lines 10 - 99 - initialises variables and goes to subroutines which set up and start the game

Lines 100 - 999 - The main move routine gets input from the joystick and uses LOCATE to see if a move is possible. The X and Y coordinates of the red and blue dots are compared and the blue dot is moved closer to the red. Line 500 is a delay to slow things down a little

Lines 1000 - 2170 - The game goes through five mazes, each one a different colour. The variable CS is used to set the colour in the POKE command in line 1530. The screen is filled with a colour then the RND function determines the direction the maze takes. Half of the maze is plotted from the top left and half from the bottom right.

Lines 2230 - 2999 - When the maze is complete the blue and red dots are placed in their starting positions. The joystick fire button or the START key start the game. The OPTION key can be used to redraw the maze if the two halves don't join up.

Lines 3000 - 3999 - Colour and a cheerful sound are used to indicate a win. There is also the option to continue playing or to end.

Lines 4000 - 4999 - Colour and the sound of a gunshot indicate a loss. A mournful tune is also played. Once again the option is there to continue or end.

Lines 5000 - 5999 - This quiet but colourful subroutine displays the score at the end of the game. The choice of starting again or ending is also there.

Lines 6000 - 6260 - This rather tuneless bit of graphics prints a title for the start of the game. To skip this bit you can start the game by entering GOTO 40.

Lines 6800 - 6970 - This part of the starting subroutine prints instructions.

Lines 9000 - 9970 - DATA used to print the starting title.

MONSTER MAZE

```
WO 1 REM ******************************
ZF 2 REM *        MONSTER MAZE        *
LU 3 REM *             by             *
JC 4 REM *        DAVID LAMONT        *
SR 5 REM * -------------------------- *
CG 6 REM *  NEW ATARI USER - JAN '91  *
WU 7 REM ******************************
NN 8 REM
OC 20 GOSUB 6000
OI 40 TURN=0:WON=0:LOST=0
MH 50 GOSUB 1000
ID 99 BB=0
LY 100 REM MAIN MOVE
PS 300 COLOR 0:PLOT XP,YP:COLOR 0:PLOT XB
   ,YB
XQ 305 ST=STICK(0)
DU 310 IF ST=14 THEN YP=YP-1:LOCATE XP,YP
   ,AA:IF AA<>0 THEN YP=YP+1
JS 315 IF XB<XP THEN XB=XB+1:LOCATE XB,YB
   ,BB:IF BB<>0 THEN XB=XB-1
WK 320 IF ST=11 THEN XP=XP-1:LOCATE XP,YP
   ,AA:IF AA<>0 THEN XP=XP+1
QP 325 IF YB<YP THEN YB=YB+1:LOCATE XB,YB
   ,BB:IF BB<>0 THEN YB=YB-1
HE 330 IF ST=7 THEN XP=XP+1:LOCATE XP,YP,
   AA:IF AA<>0 THEN XP=XP-1
HS 335 IF XB>XP THEN XB=XB-1:LOCATE XB,YB
   ,BB:IF BB<>0 THEN XB=XB+1
GM 340 IF ST=13 THEN YP=YP+1:LOCATE XP,YP
   ,AA:IF AA<>0 THEN YP=YP-1
OP 345 IF YB>YP THEN YB=YB-1:LOCATE XB,YB
   ,BB:IF BB<>0 THEN YB=YB+1
WY 350 COLOR 2:PLOT XP,YP
FT 360 IF YP=23 THEN GOTO 3000
HH 490 COLOR 3:PLOT XB,YB:IF XB=XP AND YB
   =YP THEN GOTO 4000
KU 500 FOR D=1 TO 50:NEXT D
NH 999 GOTO 100
TW 1000 REM DRAW MAZE
SD 1005 TURN=TURN+1
CT 1010 IF TURN=1 THEN CS=2
EI 1020 IF TURN=2 THEN CS=3
JP 1030 IF TURN=3 THEN CS=8
YX 1040 IF TURN=4 THEN CS=11
CL 1050 IF TURN=5 THEN CS=14
ND 1520 GRAPHICS 3+16:SETCOLOR 4,0,8
FJ 1530 POKE 708,CS*16+10
ZJ 1535 POKE 709,54
XL 1540 FOR Y9=0 TO 23:COLOR 1:PLOT 1,Y9:
   DRAWTO 39,Y9:NEXT Y9
NX 2000 REM DRAW TRAIL
HO 2005 X=2:Y=2:COLOR 0:PLOT 2,1:DRAWTO 2
   ,2
MY 2010 FOR A=1 TO 250
YC 2020 NUM=INT(4*RND(0)+1)
HL 2030 IF NUM=1 AND Y>2 THEN Y=Y-2:DRAWT
   O X,Y
CA 2040 IF NUM=2 AND X<38 THEN X=X+2:DRAW
   TO X,Y
ZU 2050 IF NUM=3 AND Y<22 THEN Y=Y+2:DRAW
   TO X,Y
GI 2060 IF NUM=4 AND X>2 THEN X=X-2:DRAWT
   O X,Y
CB 2070 NEXT A
DL 2100 COLOR 0:PLOT 38,23:DRAWTO 38,22
DK 2105 X=38:Y=22
NA 2110 FOR A=1 TO 250
YE 2120 NUM=INT(4*RND(0)+1)
HN 2130 IF NUM=1 AND Y>2 THEN Y=Y-2:DRAWT
   O X,Y
```

```
CC 2140 IF NUM=2 AND X<38 THEN X=X+2:DRAW
   TO X,Y
ZW 2150 IF NUM=3 AND Y<22 THEN Y=Y+2:DRAW
   TO X,Y
GK 2160 IF NUM=4 AND X>2 THEN X=X-2:DRAWT
   O X,Y
CD 2170 NEXT A
SX 2230 REM SET COLOUR.ANS STARTING PLACE
   S
OH 2240 XP=2:YP=1:XB=38:YB=23
CD 2250 COLOR 2:PLOT XP,YP
FO 2260 COLOR 3:PLOT XB,YB
PX 2300 REM START OR OPTION
DZ 2310 POKE 53279,0
YH 2320 IF PEEK(53279)=6 THEN RETURN
ZD 2325 IF STRIG(0)=0 THEN RETURN
II 2330 IF PEEK(53279)=3 THEN GOTO 1020
SN 2999 GOTO 2320
ZB 3000 REM MADE IT
CC 3010 GRAPHICS 2
CW 3015 WON=WON+1
UR 3020 POKE 16,64:POKE 53774,64:POKE 752
   ,1
LW 3030 POKE 53279,0:POKE 732,0
QX 3040 SETCOLOR 0,1,12:SETCOLOR 2,7,8:SE
   TCOLOR 4,7,8
UC 3045 SETCOLOR 1,1,12
ZY 3050 ? #6
MD 3060 ? #6;"____________________"
AE 3070 ? #6
CJ 3080 ? #6;"       PHEW!"
BB 3085 ? #6
JH 3090 ? #6;"      MADE IT"
BE 3095 ? #6
LN 3100 ? #6;"____________________"
GW 3200 FOR P=100 TO 50 STEP -2
DY 3205 SOUND 1,P-20,14,8
NV 3210 SOUND 0,P,10,8
NR 3215 FOR D=1 TO 10:NEXT D
IA 3220 NEXT P
HL 3230 SOUND 0,0,0,0
IR 3235 SOUND 1,0,0,0
YY 3260 IF TURN=5 THEN FOR D=1 TO 250:NEX
   T D:GOTO 5000
CH 3270 ? "     PRESS START FOR ANOTHER M
   AZE"
GW 3280 ? :? "              OR OPTION TO EN
   D"
PY 3300 REM START OR OPTION
EA 3310 POKE 53279,0
LZ 3320 IF PEEK(53279)=6 THEN GOTO 50
QT 3325 IF STRIG(0)=0 THEN GOTO 50
KT 3330 IF PEEK(53279)=3 THEN GOTO 5000
SZ 3999 GOTO 3320
ZO 4000 REM GOTCHA
CD 4010 GRAPHICS 2
OW 4015 LOST=LOST+1
US 4020 POKE 16,64:POKE 53774,64:POKE 752
   ,1
LX 4030 POKE 53279,0:POKE 732,0
EM 4040 SETCOLOR 0,1,12:SETCOLOR 2,3,8:SE
   TCOLOR 4,3,8
UD 4045 SETCOLOR 1,1,12
ZZ 4050 ? #6
ME 4060 ? #6;"____________________"
AF 4070 ? #6
AI 4080 ? #6
FU 4090 ? #6;"      GOTCHA!"
ZM 4100 ? #6
```

continued

MONSTER MAZE

```
ZP 4110 ? #6
LU 4120 ? #6;"______________________"
ZY 4300 FOR P=15 TO 0 STEP -2
XA 4310 SOUND 0,80,8,P
SJ 4315 FOR D=1 TO 15-P:NEXT D
ID 4320 NEXT P
HO 4330 SOUND 0,0,0,0
OV 4400 REM DEAD MARCH
RK 4405 RESTORE 9900
KL 4410 FOR Z=1 TO 11
EW 4420 READ NO,LE
OM 4425 YES=NO+70
QA 4430 SOUND 0,NO,10,8
ZT 4435 SOUND 1,YES,10,8
CV 4440 FOR DUR=0 TO 30*LE:NEXT DUR
HW 4450 SOUND 0,0,0,0
JC 4455 SOUND 1,0,0,0
MX 4460 NEXT Z
ZN 4525 IF TURN=5 THEN FOR D=1 TO 250:NEX
    T D:GOTO 5000
CR 4580 ? "      PRESS START FOR ANOTHER M
    AZE"
HG 4590 ? :? "              OR OPTION TO EN
    D"
QJ 4800 REM START OR OPTION
EL 4810 POKE 53279,0
MK 4820 IF PEEK(53279)=6 THEN GOTO 50
RE 4825 IF STRIG(0)=0 THEN GOTO 50
LE 4830 IF PEEK(53279)=3 THEN GOTO 5000
VT 4999 GOTO 4820
TS 5000 REM END OF GAME
CE 5010 GRAPHICS 2
UT 5020 POKE 16,64:POKE 53774,64:POKE 752
    ,1
LY 5030 POKE 53279,0:POKE 732,0
WF 5040 SETCOLOR 0,1,12:SETCOLOR 2,12,8:S
    ETCOLOR 4,12,8
UE 5045 SETCOLOR 1,1,12
AA 5050 ? #6
MF 5060 ? #6;"______________________"
AG 5070 ? #6
FJ 5080 ? #6;" YOU PLAYED ";TURN;" MAZES"
AM 5090 ? #6
FP 5100 ? #6;"      YOU WON ";WON
ZQ 5110 ? #6
LV 5120 ? #6;"______________________"
CM 5280 ? "      PRESS START FOR ANOTHER M
    AZE"
HB 5290 ? :? "              OR OPTION TO EN
    D"
QA 5300 REM START OR OPTION
EC 5310 POKE 53279,0
KU 5320 IF PEEK(53279)=6 THEN GOTO 40
VE 5330 IF PEEK(53279)=3 THEN GOTO 5999
RC 5400 GOTO 5320
GN 5999 GRAPHICS 0:END
YC 6000 REM START AND INSTRUCTIONS
DY 6010 GRAPHICS 5
LE 6015 SETCOLOR 2,0,6:SETCOLOR 4,0,6
UU 6020 POKE 16,64:POKE 53774,64:POKE 752
    ,1
WI 6100 REM STARTING TITLE
OY 6110 FOR X=1 TO 46
QU 6120 READ X1,Y1,X2,Y2
IT 6125 M1=INT(79*RND(0)):M2=INT(159*RND(
    1))
TT 6130 COLOR 2:PLOT X1,Y1:SOUND 0,M1*5,1
    0,8:SOUND 1,M2,10,8
NU 6160 DRAWTO X2,Y2
UV 6170 SOUND 0,0,0,0:SOUND 1,0,0,0
QJ 6180 FOR D=1 TO 50:NEXT D
MG 6190 NEXT X
UG 6200 ? "      PRESS HELP FOR INSTRUCTIO
    NS "
JM 6210 ? :? "              OR START TO BEG
    IN"
SV 6220 REM START OR HELP
MD 6230 POKE 53279,0:POKE 732,0
YP 6240 IF PEEK(53279)=6 THEN RETURN
ZL 6245 IF STRIG(0)=0 THEN RETURN
UE 6250 IF PEEK(732)=17 THEN GOTO 6800
SQ 6260 GOTO 6240
TM 6800 REM INSTRUCTIONS
BR 6810 GRAPHICS 0
QB 6815 POKE 752,1
WW 6820 SETCOLOR 2,12,4:SETCOLOR 4,12,4
TY 6830 SETCOLOR 1,1,12
SC 6840 ? :? :? :? "                MAZE"
FA 6850 ? :? "USE THE JOYSTICK TO MOVE TH
    E RED DOT"
QQ 6860 ? "OUT OF THE MAZE AT THE BOTTOM
    RIGHT"
FH 6870 ? "               CORNER.":? :? "
     THE BLUE DOT WILL TRY TO CATCH YOU"
ZS 6880 ? :? "  THERE ARE 5 MAZES TO GET
    THROUGH"
TO 6890 ? :? "    IF ANY MAZE DOES NOT JO
    IN UP"
TF 6900 ? "      PRESS OPTION TO DRAW AGAI
    N"
YA 6940 ? :? "            PRESS START TO BEGI
    N"
FB 6950 POKE 53279,0
ZJ 6960 IF PEEK(53279)=6 THEN RETURN
AF 6965 IF STRIG(0)=0 THEN RETURN
XN 6970 GOTO 6960
GQ 9000 REM DATA
FL 9010 DATA 24,8,24,39,25,39,25,8,26,8,2
    6,39
DA 9020 DATA 37,8,37,39,38,39,38,8,39,8,3
    9,39
RQ 9110 DATA 4,8,4,39,5,39,5,8,6,8,6,39
RS 9120 DATA 17,8,17,39,18,39,18,8,19,8,1
    9,39
CJ 9210 DATA 64,8,64,39,65,39,65,8,66,8,6
    6,39
VC 9330 DATA 44,8,59,8,44,9,59,9,44,10,59
    ,10
AG 9340 DATA 44,37,59,37,44,38,59,38,44,3
    9,59,39
GC 9430 DATA 64,8,79,8,64,9,79,9,64,10,79
    ,10
MI 9440 DATA 64,37,79,37,64,38,79,38,64,3
    9,79,39
JG 9540 DATA 64,22,75,22,64,23,75,23,64,2
    4,75,24
CC 9600 DATA 7,9,11,13,7,10,11,14,7,11,11
    ,15
MJ 9610 DATA 12,13,16,9,12,14,16,10,12,15
    ,16,11
IL 9620 DATA 27,8,36,8,27,9,36,9,27,10,36
    ,10
XG 9700 DATA 59,11,44,37,59,12,44,38,59,1
    3,44,39
OM 9710 DATA 58,11,44,36
WY 9720 DATA 27,22,36,22,27,23,36,23,27,2
    4,36,24
TU 9900 REM DEAD MARCH DATA
WJ 9970 DATA 81,3,81,2,81,1,81,3,68,2,72,
    1,72,2,81,1,81,2,85,1,81,4
```

MUSIC PAINTER

John S Davison discovers a way that anyone can make music even if they know nothing at all about music!

As a long time Atari 8-bit fan I was delighted to see Page 6 obtaining stocks of classic 8-bit programs and, even better, selling them at bargain prices! There's something for everyone, and even the budding computer music maker hasn't been forgotten. For just £7.95 he can now become the proud owner of Music Painter, a computer music package allowing the composition and playback of music using the 8-bit's internal sound chip.

Having to learn standard music notation often puts people off getting started in music making. Music Painter is aimed at the complete novice, and neatly gets round this problem by using a much simplified notation method. The screen shows one and a half musical staves, one for the treble clef and a partial one for the bass. This gives a note pitch range of three octaves, ample for use with the sound chip. Notes are represented by coloured lines, which may be "painted" onto the staves under joystick control. Placing a line higher on the staves produces a higher pitch, moving it lower results in a lower pitch. The longer the line, the longer the note plays - you can't get much simpler than that!

Surprisingly, the program is fully chromatic, that is, it can handle all twelve semitones in an octave, making it possible to reproduce virtually any music in any key. Each semitone has its own colour, making visual identification of a note's pitch quite easy. Once again, the program tries to simplify the difficult concepts - sharps, flats, and key signatures again aren't handled in the usual notation, but by modifying the way in which lines representing notes are placed on the staves.

JOYSTICK DRIVEN

The program is almost totally joystick driven. The only exceptions are use of the Reset key to clear a musical piece from memory, and the keying of a filename when saving a new piece to disk. Everything else is achieved by using the joystick to select an icon to choose an option, or to position a note on the staves. The note positioning operation is aided by the program displaying the names of the notes as the cursor passes over their positions on the staves. Here though, it does use standard note names and sharp and flat signs, so you can at least start learning about them.

After positioning the cursor for the required note pitch, a press of the joystick button paints the note into place. A single press results in a note of the shortest duration, longer notes are formed by holding down the button and moving the joystick to the right. This causes the screen to scroll, painting a continuous line for that note, with its duration represented by the line's length. It's also easy to change existing notes, and to delete, insert, and copy one or more notes in an existing piece.

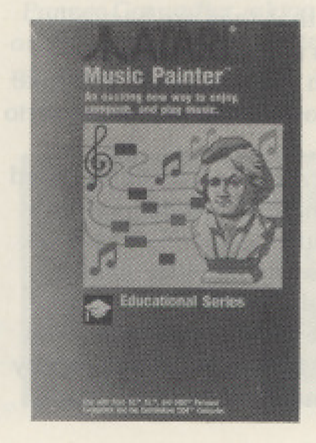
I was disappointed to find the program only handles three voices, rather than the four available as standard on all Atari 8-bit machines. Thus, it can only play three part harmonies instead of four. The disk supplied also carries a Commodore 64 (please pardon the bad language!) version of the code on side two, so it looks as if Music Painter has been designed down to the lowest common denominator. However, the novice probably won't miss that fourth voice much, so why worry?

Each voice can be independently assigned one of four sounds, namely piano, flute, violin, or drums. As these sounds are generated internally by the sound chip rather than being digitally sampled, you wouldn't expect them to sound anything like their names, and indeed they don't. However, they do provide scope for simple experimentation with different sounds.

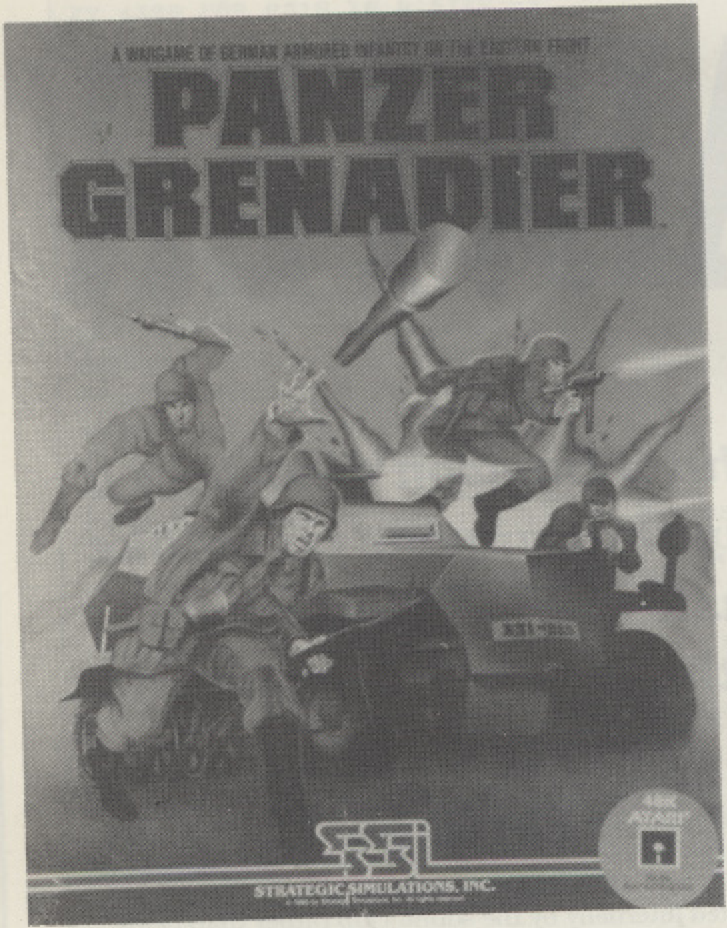
BACH TO FATS WALLER

Other functions provided allow you to set the bar size to accommodate different time signatures; to alter the tempo of playback; to independently turn on and off each of the voices; to easily play short sections of the piece; and to quickly scroll backwards and forwards through the music. There's also a set of file functions allowing you to load, save, and delete files from disk, and to request a directory listing. The supplied disk also includes a set of music files, covering styles from Bach to Fats Waller. You can load and listen to these straight away to quickly get a feel for the program's functions and capabilities.

Overall, I like Music Painter. It gives the beginner a basic introduction to computer music making, without getting bogged down in musical theory. The corollary, of course, is that it won't teach you much about music theory either, but then that isn't its purpose. Its aim is to turn your computer into an aid to musical creativity, in a way that virtually anyone can use - something it achieves admirably. If you've ever thought about getting into music making with your Atari 8-bit machine, Music Painter is probably the easiest route available. And at £7.95 you can't really go wrong!



MUSIC PAINTER
Atari/Page 6
£7.95
Reviewed by John S Davison



PANZER G

Michael Ingham takes an in-depth look at a wargame that offers five historic scenarios

A Wargame of German Armoured Infantry on the Eastern Front - reads the legend across the top of the large SSI box containing Panzer Grenadier. This is emphasized by the illustration of tough-looking characters in improbably neat uniforms leaping from a troop carrier hurling grenades and firing submachine guns - rather more Hollywood than history!

This is the third in the series of Roger Damon designed wargames for 8-bit Ataris. The first was Operation Whirlwind (Broderbond)followed by Field of Fire, Panzer Grenadier and Vietnam. Finally came a Wargame Construction Set for D-I-Y games: all after the first published by SSI. All the Damon games share a family resemblance in that they are basically tactical battles involving infantry with support weapons, armoured units and artillery, in which you the player can take only one side against the computer; you cannot play a scenario first from one side and then the other.

Opening the box of Panzer Grenadier, you find a double-sided disk and one of SSI's handsomely-printed booklets, the introduction section setting the scene by putting you in command of the Grenadier regiment of the Grossdeutschland Division. Historical note - the Grossdeutschland name was originally given to a motorized infantry regiment formed from the Berlin ceremonial guard unit later expanded to divisional strength by adding a fusilier and a panzer regiment plus divisional artillery, etc. As one of the very few named rather than numbered units in the Wehrmacht (as distinct from the Waffen SS) it was an elite formation and was equipped and staffed accordingly.

The introduction states, however, "some leeway has been taken in conforming the game to the computer", so this is not a game for the wargaming purist who insists on meticulous historical accuracy.

Movement rates and weapon ranges are not strictly in ratio to one another - and you do not have the full range of weapons that such a regiment might have had. There are two scenarios where you will certainly wish your anti-tank company and panzerfaust platoons were not on leave! On the other hand, after the Kursk battle even elite units were seldom at anything like establishment strength. Commanders had to manage with what they had; Von Mellenthin records in "Panzer Battles" (Fontana) one desperate counter-attack against a Russian infantry division plus tanks by a Grossdeutschland battle group of a panzer detachment of about twenty tanks, one company of the reconnaissance unit, one battalion of infantry in half-tracks and one troop of self-propelled artillery commanded by a divisional staff officer. Some of the scenarios are not too different!

The game side of the disk is loaded first, then the Scenario side which first offers the choice of loading a saved game, choosing another scenario from the five in the game or loading the scenario shown. Pick your battle, choose the difficulty level, then either fast or slow speed which only affects the fire and enemy movement phases, and, unless you can pick out the unit firing, count how many times it fires and read the messages at the bottom of the screen at lightning speed, pick slow by pressing Start.

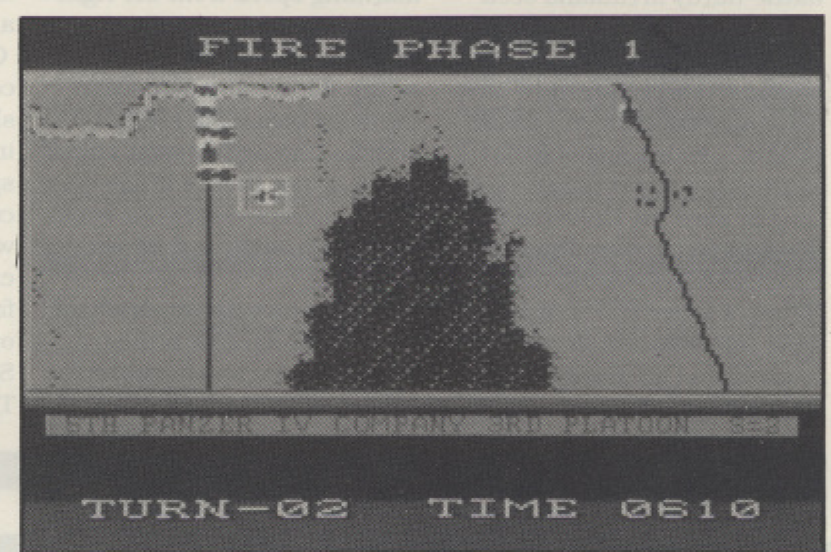
Up comes the map and you are into the first phase of the first turn. All the Damon designed games, like most wargames, are split into turns which are subdivided into phases but the phases and their order does vary in different games. In Panzer Grenadier, the first phase of each turn is Observation, scroll round the screen to scan the terrain (the brown blobs are hilltops, the rest are fairly obvious), and in the lower part of the map you will find your battlegroup. This varies from scenario to scenario and is made up from infantry, pioneers, machine guns, mortars, reconnaissance units, assault guns, self-propelled artillery and three types of tank. Place the cursor over a unit and its details are shown in the text window below the map; note the number at the right, this is the number of "sub-units" present and how many times the unit fires per phase. At the beginning most units have S=3 but tanks can be 4 or 5. Start worrying if it drops to 1 - that unit is on its last legs!

Most of the icons are fairly clear but make quite sure that you can pick out the pioneer companies; the icon is only very slightly different from infantry but their capabilities are quite different - the number of times I have tried to clear a minefield with an infantry company. Adjusting the brightness will not

R GRENADIER

help the confusion but it can help in distinguishing the tanks which differ quite a lot in what they can do. The only action you can take in this phase is to order units on foot to dig-in or get ready to move.

Then follows fire 1/ movement/ enemy fire 1/ fire 2/ enemy movement/ enemy fire 2/ victory level (the score) and a save position opportunity, making up one turn. The big difference between those games which have a command phase followed by an action phase and a boardgame procedure like this is that you now have greater control. In the fire phases, each unit fires separately, so you need not waste fire on an enemy that is already eliminated. In the movement phase, each unit is moved with the joystick square by square which can be tricky if trying to keep on a road to get maximum movement - and don't get traffic jams in Scenarios 2 and 4 by running out of movement on a bridge or minefield gap so blocking other units.



SCENARIOS

The scenarios are, I think, mainly possible actions rather than detailed reconstructions; detail is usually very difficult to get at the tactical level anyway, even for WW11. They are:

Bridges over the Lutchessa - recapture three bridges and then hold off a counter attack. The line suggested in the gamebook works reasonably, but that in "The Electronic Battlefield" is even better.

Cards on the table - the attack on the Kursk salient. This is "authentic" in that the GD division was in the spearhead of the southern pincer and is closest to getting the feel spoken of in the designer's notes. My favourite - I've yet to get even a minor victory at the Advanced level. One tip, if you break through the first defence line quickly and cheaply, save the position, then you can try several ways of getting into the town, over the bridge and off the map.

Kirovgrad - stop the tanks breaking through. If the GD were in action here it would have been in Autumn '43 and, although this is an infantry game, I've yet to find their best place here; in this game, infantry is quite weak against armour so the choice seems either to tuck them away or to dig them in on the front line where they will probably be lost but they draw fire away from your tanks, tricky!

One more river - move into a town and defend against the counterattack; if it was in Rumania, it would have been in Spring '44 not '45. Lots of possible lines but if you want the front just above the town, practice with the joystick; you need every square of movement to get dug-in in time. If you have seen off the attack, try sending your recon units up to the map top, you may get a surprise.

Wilkowischen - this time you are part of an attack and there are again many ways of setting about it; only one tip, if you get the entire regiment into the town and still have only a minor victory, read your orders again.

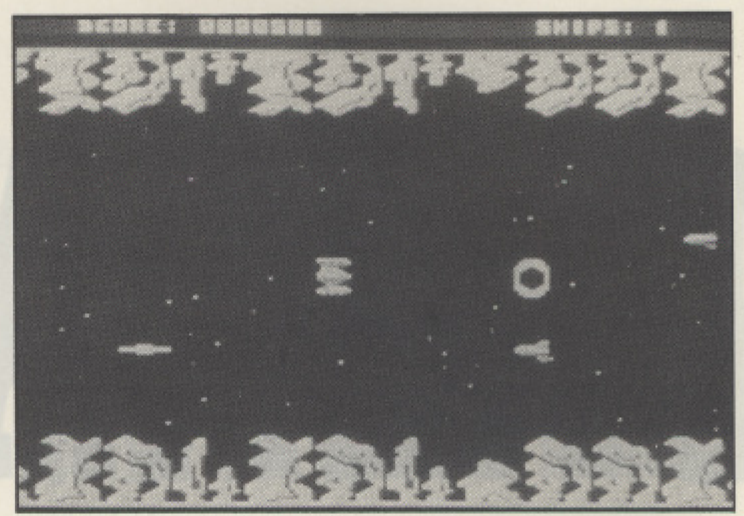
FOR BEGINNERS?

Now the important bit, who should buy the game? Experienced wargamers will prefer Kampfgruppe (SSI) for eastern front tactics, but for lighter relief when something is wanted to fill an hour or so, this should fill the bill, unless you build your own with the Construction Set. For beginners it is a good start to tactical small unit wargaming. A good rather than a great game; all the Damon series have an unrealistic amount of reconnaissance by fire (blowing holes in the landscape to see if an enemy is there) but it shows less in Panzer Grenadier. Also, the scenarios of 12-15 turns are about the right length and all are possible at the first two levels. And you can still get the game! When first issued, it was at £24.99 rather expensive, now at £16.95 you should get your money's worth of enjoyment. Now perhaps if I try that other route in Scenario 2, I might have more tanks left by the time the bridge is up ....

Panzer Granadier, along with several other wargames, is available from Miles Better Software who kindly supplied the review copy.

PANZER GRENADIER
Publisher: SSI
Price: £16.95
Availaible from Miles Better Software

MATTA BLATTA



Over the years, British Telecom produced some excellent software for the Atari. Warhawk and The Extirpator were a couple of the best but the creme of the crop was unquestionably Druid - a brilliant (and highly underrated, in my opinion) Gauntlet clone that left U.S.Gold's official version destined for the dustbin (see review in issue 30). B.T. subsequently turned their attentions to re-releasing some of Activision's highly regarded titles in their budget Silverbird range, and again found an enthusiastic market. Sadly, you won't see any new games from B.T. today but most of the existing range can still be found, at prices that seem too good to be true!

This seems like a opportune moment to introduce what is probably the most recent original game to be issued with the Silverbird label - MATTA BLATTA. There's definitely nothing original about the theme though. It's an old-fashioned, blast-everything-in-sight horizontal scroller with enough action to keep even the most battle-hardy arcadians occupied! A game wouldn't seem the same without a plot (would it?) and Silverbird have obligingly enrolled you as the pilot of a technologically astounding super fighter, battling to save the Universe from deadly anti-matter aliens. The nasties are traversing the corridors of inner-space to wreak their evil destruction on the hapless and ignorant people of Everywhere - only you can stop them. Even so, its a pretty straightforward shoot 'em up!

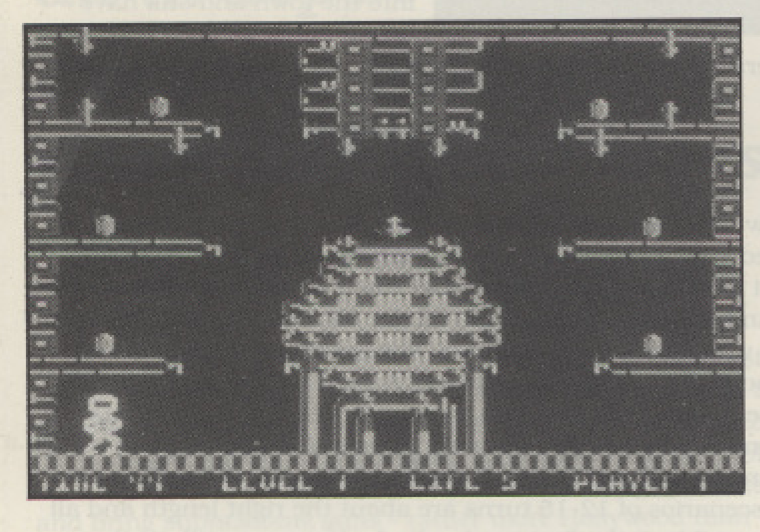
The alien craft appear at an alarming speed from the right hand edge of the scrolling playfield and you're expected to zap them into microscopic particles before they inflict serious damage on your ship - like it or not there's little you can do except close your eyes, waggle the stick and hit that trigger!

The graphics are generally of a high standard with the traditional starscape backdrop bordered by a variety of interesting designs throughout he levels. There are nice touches elsewhere such as a rainbow graphics demo on the title page and sound, too is of a reasonable standard.

Overall, Matta Blatta is a competently programmed shoot 'em up which could be improved by a more sensible speed restriction on the incoming nasties, but is a worthwhile challenge for those expert players. If you don't fancy this one, look out for other gems bearing the the Silverbird/Firebird label. They're too good to be missed!

Title: **MATTA BLATTA**
Publisher: **Silverbird**
Price: **£1.99 cassette**
Players: **1**
Loading: **8'55"**
Reviewed by Paul Rixon

ZOLTAN ESCAPE



Another offering from B.Ware that, to be honest, is not at all dissimilar in nature to their other recent efforts. If you've read the reviews of Escaper, Cybor-Stien and A-Zone in previous issues of NEW ATARI USER then you should have a pretty good idea of what this one's all about! This time, B.Ware's traditionally crude packaging is surprisingly lacking in any form of incredible explanation - perhaps we should view that as a bonus!

You've apparently crash-landed on a strange planet called Zoltan and your aim is simply to escape (hence the title!). To reach safety you must guide your jet-powered astronaut through a series of screens, collect Uranium fuel pods scattered throughout the levels and avoid contact with walls, floors and other dangerous barriers. If you manage to collect all of the pods and make it to the exit point before the time limit expires your intrepid astronaut advances onto a subsequent screen. It sounds too easy to be true, and naturally it is! The main problem is that to reach the pods you are forced to travel through pulsating 'lasers' and there's little you can do to prevent them appearing at the worst possible moment. The chances of survival aren't improved by the abysmal collision detection that can result in your character's demise for no obvious reason!

In common with other games from the B.Ware stable, the graphics fall way below the standard that Atarians ought to expect - in particular, the information screens between levels are difficult to read and the design of scenery elsewhere is decidedly uninspiring. In the sound department there are a few bleeps and screeches but nothing that virtually any Atari owner couldn't produce in a couple of lines of Basic! Well, at least it's preferable to the dreadful noise in A-Zone and Escaper!

Zoltan Escape is supplied on disk or cassette directly by B.Bytes Computers of Hinckley, although you might have guessed from the comments above that I'm not about to recommend you dash off for your cheque book! If you have a big collection of shoot 'em ups and desperately want to add more then Zoltan Escape will pad your collection out. Alternatively you might want to purchase a copy just to show your support to one of the few remaining companies interested in marketing Atari software. It's a pity that I can't recommend it more strongly.

Title: **ZOLTAN ESCAPE**
Publisher: **B.Ware**
Price: **£5.99 Cass/Disk**
Players: **1/2**
Loading: **N/A**
Reviewed by Paul Rixon

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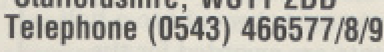
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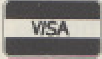
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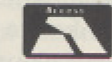
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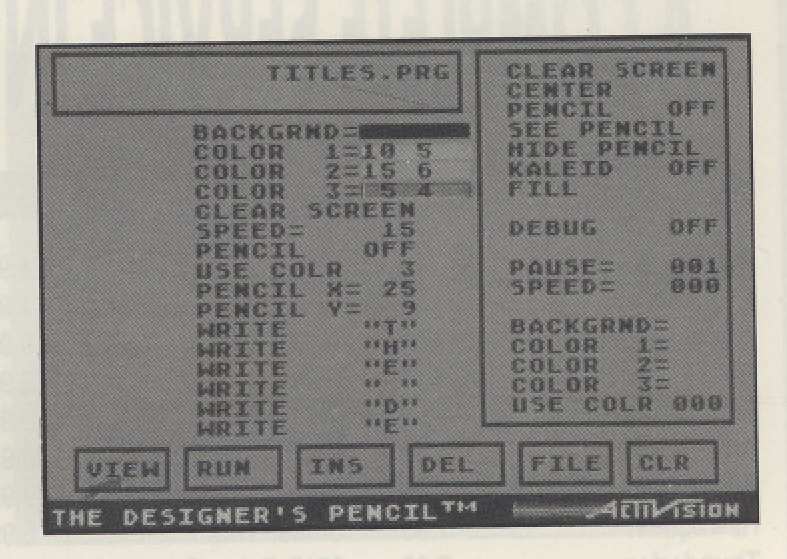






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THE DESIGNER'S PENCIL



Have you ever wished you could program your Atari without touching the keyboard? If so, THE DESIGNER'S PENCIL - Activision's audio-visual programming tool for the shy of typing - could be just up your street!

Inside the box, you should find a detailed instruction guide explaining the concepts of 'Prog' - Activision's unique language - and the wider aspects of The Designer's Pencil environment. Unfortunately mine was missing several important pages but hopefully this isn't a common characteristic! Unlike most languages, Prog allows you to begin creating code almost immediately without learning the exact syntax of commands. This is because user input is carried out exclusively via the joystick - even when entering filenames. Following an introductory demo you're faced with a screen divided into two main windows. On the left is the program area (which initially holds the coding for the demo) and on the right is a list of instructions. Both segments can be scrolled vertically to reveal more of the information. Command boxes at the foot of the screen allow you to clear memory, insert and delete lines of code, run the current program, view a freeze frame of the output and perform file I/O functions. The software is supplied on ROM but can be used with disk or cassette systems to load and save data. To select an option or scroll a window, just point and click with the joystick!

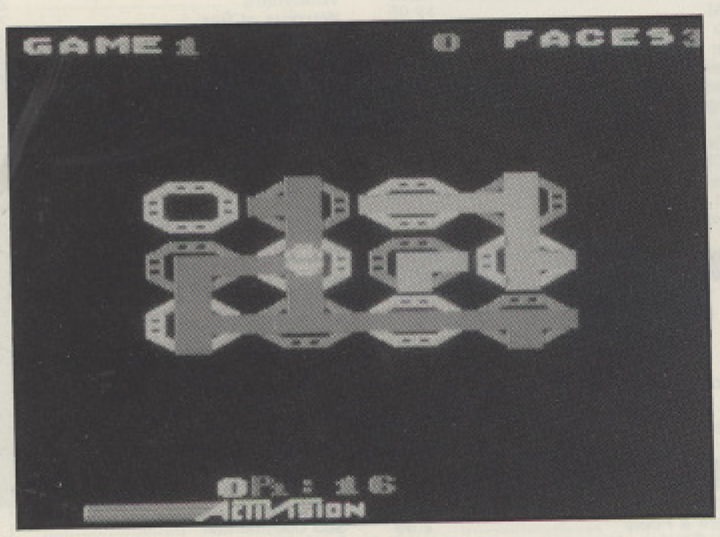
Creating a program is straightforward - select the required instructions, enter any parameters needed and click on 'Run' to observe the results. Prog provides some 85 instructions - it may sound daunting but there's no need to learn them all at once. There are several demonstrations stored in ROM and if you have a suitable printer you can obtain a hard copy for leisurely study. Many commands relate to movement of a 'pencil' - Prog's equivalent of Logo's Turtle. It can draw lines, circles and arcs with up to four selected colours, fill areas and produce kaleidoscope effects. Once the basics have been mastered you can experiment with variables, conditional clauses, data statements, jumps, subroutines, sound and more.

The Designer's Pencil is a solidly built, easy to use and fully-featured tool suitable for all ages and abilities. If you want a painless and enjoyable introduction to programming or just want to impress the folks with some clever sound and graphics, it's ideal!

Title:	**THE DESIGNER'S PENCIL**
Publisher:	**Activision**
Price:	**£9.95 ROM**
Players:	**N/A**
Loading:	**N/A**

Reviewed by Paul Rixon

ZENJI



This oldie from Activision proves the adage that simple ideas are often some of the best. When ZENJI was published back in 1984 it was accompanied by a story outlining your mission, as a specially commissioned 'Zone Ranger', to explore the uncharted regions of the Universe. All this seems to have been forgotten over the years and replaced by a rather uninformative summary sheet. Don't be deterred by the mediocre packing - the game itself is as playable as ever!

It's based around a maze constructed from a number of differently shaped paving segments. These can be swivelled to form various path configurations and the idea is simply to link all the sections together so that none are isolated from a computer-designated source. The player has a birds-eye view of a 'face' (of all things!) which is manoeuvred around the maze using the joystick. The trigger spins the underlying section of path so that the necessary connections can be made. When a path has been linked to the source it changes colour to assist in the location of the remaining sections. A lively tune in the background plays increasingly faster as your time allowance diminishes - a clever touch that (unusually) is not spoilt by the music becoming excessively irritating.

Zenji incorporates eight alternative playing levels that offer a uniquely wide range of difficulty settings for one or two players. The initial screens are quite straightforward but provide you with a useful opportunity to experiment with various tactics that are almost essential in the later stages. Here you'll discover 'flames of desire', illusions, sparks and other nasties who'll attempt to disrupt your progress by blocking the routes to victory. They must be avoided as you can only sustain a limited number of collisions before the game is brought to a halt. Points are awarded for the completion of each screen (the less time taken, the more received) and there are bonuses on offer if you land on particular squares when highlighted during the game.

Zenji is a simple, fun concept that seems certain to appeal to players of all ages. Although the graphics won't win any prizes for outstanding quality, they are quite adequate in a game whose overriding strength is undoubtedly its immense power of addictiveness.

If your New Year's Resolution was to spend less time with your Atari, DO NOT buy this game!!

Title:	**ZENJI**
Publisher:	**:Activision**
Price:	**£9.95 ROM**
Players:	**1/2**
Loading:	**N/A**

Reviewed by Paul Rixon

STAR RAIDERS II

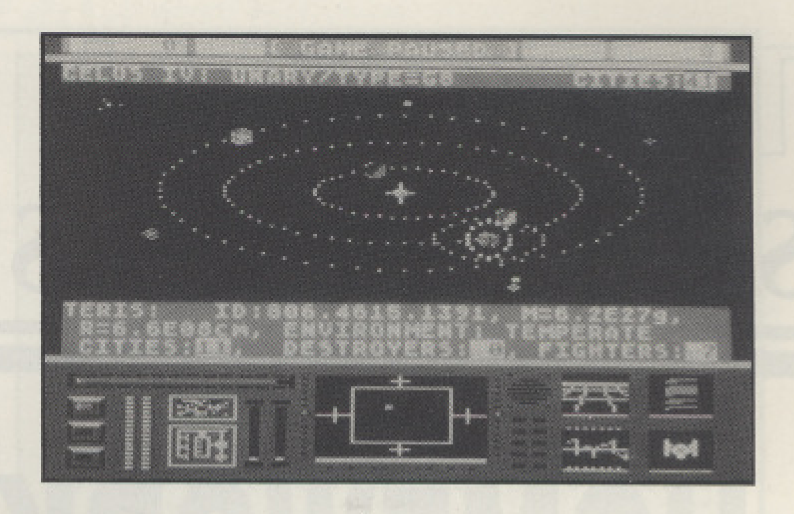
This game's predecessor needs little introduction - it was the factor that persuaded many people to buy their first Atari computer and, over a decade later, is still widely regarded as the best game of all time. Atari's follow-up - The Last Starfighter - was apparently in widespread illicit circulation before it was finally officially released in 1986, with the more obvious title STAR RAIDERS II.

In Star Raiders humanity was threatened by the evil Zylon empire but your courage and skill helped to overcome the odds and led the Federation to victory. Unfortunately, it seems that a few Zylon warriors who promised good behaviour were freed to re-settle on their home planet, and have now decided to seek revenge. The Zylon Master Force is threatening to overrun the solar system and the Federation have called upon the hottest pilot around (yes, that's you!) to fly the last Starfighter - Liberty Star - into combat. Your mission is to eliminate the entire fleet of Zylon fighters and destroy the enemy's bases.

The battle zone extends over two separate systems - Celos IV, which you must defend, and Procycon, which you should attack. A colourful system chart displays the positions of the planets, space stations and squadrons of Zylon fighters and allows you to 'warp' to each location. If you're in enemy territory you must carry out ground attacks on Zylon bases to prevent them manufacturing additional squadrons. A keyboard press toggles your weapon between laser cannon (for zapping Zylon fighters into space dust) and missile volleys, which are aimed using cross-hair target sights projected onto the scrolling landscape of the planet below.

Stunning is the only way to describe the 3-D starscape graphics - they're even better than the original game. However, long-term Star Raiders enthusiasts have expressed disappointment in the Liberty Star's sluggish controls and the fact that Zylons are forced to virtually present themselves for destruction. Experienced players have also complained that the scoring system doesn't incorporate the time taken to complete a mission. It's good news for beginners though!

Minor grumbles aside, Star Raiders II is a worthy successor to a much celebrated masterpiece of software entertainment and, like the original, should have pride of place in everyone's collection. PAGE 6 may still have some bargain-priced copies available.-



Title:	**STAR RAIDERS II**
Publisher:	**Atari Corp.**
Price:	**£14.95 ROM/Disk**
Players:	**1**
Loading:	**N/A**

Reviewed by Paul Rixon

POGOTRON

On lesser 8-bit micros, POGOTRON is a game based upon the search for components of a space craft which is needed to escape from an evil Guardian. You might reasonably assume, therefore, that an Atari game with an identical name, released by the same company and supplied with a similar inlay card could just possibly be a conversion from the other formats. Well, I'm sorry to say that it's not! This Pogotron is, in fact, Paul Lay's Sprong with some subtle cosmetic surgery having removed all references to the original title. Although there is a small addenda inside the cassette box explaining the revised instructions, there's no reference to the original source of the game. I'm certainly not against re-releases but this appears to be a blatant act of deception on the part of Artronic, the likes of which hasn't occurred since Elite fobbed off Atari users with Blue Thunder instead of Air Wolf. Be warned!

Sprong was first released during 1986 by Bignose Software (see review in PAGE 6 issue 22) and subsequently by Red Rat following the demise of Bignose. It was Paul Lay's first commercially published achievement following some top-notch contributions to PAGE 6, and he has indeed produced some excellent work since (check out the wonderful Munchy Madness in issue 24!). Your objective in the game is simply to guide a character on a pogo-stick through fifty action-packed screens, with the ultimate aim of retrieving a long lost golden-pogo. Travelling from left to right, you must time jumps to perfection in order to leap across the various platforms and avoid a multitude of obstacles - raging fires, lava flows, laser beams, acid rain and lightning to name but a sample.

The graphics have a cheerful cartoon theme with bright and colourful scenery whilst the action is accompanied musically by a forgettable rendition of 'Danny Boy'. Despite first appearances, this is not an easy game. Sprong requires instant reflexes, immaculate judgement and outstanding perseverance. In short, its the sort of semi-impossible challenge that Firefleet and Sidewinder addicts should greet with open arms!

Don't forget, if you already have Sprong then buying Pogotron is a complete waste of time and money. However, if these names are new to you and you're looking for something to test your skills of endurance, this game should certainly be on the short-list.

Title:	**POGOTRON**
Publisher:	**Gamebusters (Artronic)**
Price:	**£2.95**
Players:	**1**
Loading:	**15'30"**

Reviewed by Paul Rixon

Ian Finlayson's

TUTORIAL

SUBROUTINES

HOMEWORK HELPER

I do not know how many of you who read this magazine have children living at home. I have had letters from readers who have identified themselves as being old age pensioners or youngsters, but I have never had a letter from anyone who has admitted to being "father of five children aged 4 to sixteen" or anything like that. However I assume that at least some of you readers are, like me, fathers (and maybe one or two mothers as well). You no doubt have a bit of concern that the youngsters always seem to be playing games on the computer and never putting it to "serious" use. This makes life difficult for two reasons - first we feel some sense of failure because after all we enjoy making our computers work for us as well as playing the occasional game, and the reason for getting the machine in the first place was to help the children become familiar with computers - wasn't it? Secondly there is the problem of explaining to ones spouse why all that money has been spent on the computer (or software, disks, print ribbons, computer magazines etc.) as it only results in the youngsters playing games when they should be doing their homework!! So we have to be a bit constructive.

THE PROBLEM

I have had some success in persuading my boys to do a little word processing and to use a graphics program to do drawings for CDT homework, but this is small stuff. However a couple of months ago I had an opportunity which turned out really well. My younger son came home with a piece of homework which went as follows:

"If the letters A to Z are given values 1 to 26 find five words whose letters add up to 100 exactly."

The concept is not difficult to understand, but the implementation by conventional pencil and paper is very laborious, particularly as most of the words you think of add up to anything but 100. It occurred to me straight away that this problem could be helped by using a short program. What we needed was for the computer to calculate the addition for us.
A quick analysis of the problem showed that the program would have to include the following steps: type in a word of variable length, split that word into its component letters, take the value of each letter, work out the sum of all the letter values and save the word only if the total equals exactly 100. I did also think about the need to check the word for correct spelling, but I do not have a dictionary database or spell checker for my Atari so I did not pursue this thought any further. Anyhow I had to keep the programming requirement as simple as possible or the program would take longer to write than solving the problem by hand.

THE SOLUTION

The end result was the short listing printed here. Let me give a description of how it works.

Line 30 - This sets up a DIMension for the word(s) which are to be typed in. I have assumed that we will not need any words longer than 20 letters, but maybe someone can prove me wrong!!
Line 40 ensures that the string WORD$ and the variable TOTAL are both reset to nothing.
Line 50 is where the word is typed in.
Lines 60 to 90 form a For-Next loop which repeats for every letter in WORD$.
Line 70 gets the value of each letter. It assumes that the word is typed in capitals. For capital letters the ASCII value of A is 65, B is 66 and so on, so to get 1,2,3 instead of 65,66,67 we have to take the ASCII value minus 64. I had originally thought of setting up A=1:B=2:C=3:D=4.... which would have been rather untidy, so I was glad I remembered that letters have a sequence of values by which the computer recognises them, and it is easy to convert to the required values.
Line 80 adds the value of the current letter to the total of all letters so far.
Line 90 is the end of the loop.
Line 100 prints the value of the word on the screen so that you can see how close to 100 it is. This makes it easy to choose other words with different prefixes, suffixes, plurals and so on in an attempt to find the exact 100.
Line 110 - Eureka! If the score is exactly 100 this prints the word on your printer so you have a list of the correct words. If you don't have a printer change the LPRINT to ? and the word will be printed on screen so you can write it down.
Line 120 - This returns to line 40 so that the next word can be entered.

Once the program is typed in you can test it with the word "Spirited" which is one of the many words you can find that score exactly 100.

A BIT MORE POLISHED

This little program is quite simple, but it is what you might call "quick and dirty". It did the job, but it was certainly not finished enough to pass to a friend, so once the homework was done I sat down to polish it. The longer listing shows the result. You can immediately see how the program has expan-

```
EI 1 REM ******************************
PI 2 REM *  TUTORIAL SUBROUTINE 20    *
VE 3 REM *        HOMEWORK            *
LS 4 REM *           by               *
WL 5 REM *      Ian Finlayson         *
ED 6 REM * -------------------------- *
IS 7 REM * NEW ATARI USER - February 91*
EP 8 REM ******************************
NO 9 REM
FD 30 DIM WORD$(20)
TQ 40 WORD$="":TOTAL=0
MB 50 INPUT WORD$
HS 60 FOR LETTER=1 TO LEN(WORD$)
QS 70 VALUE=ASC(WORD$(LETTER,LETTER))-64
NA 80 TOTAL=TOTAL+VALUE
HL 90 NEXT LETTER
MS 100 ? TOTAL
MY 110 IF TOTAL=100 THEN LPRINT WORD$
QK 120 GOTO 40
```

ded - this is typical of the expansion you get when you take a simple program that you have produced for your own use and try to make it foolproof for use by others. Children in particular will find a way of crashing your carefully nurtured program if they can.

I will not go through this version line by line as I have included plenty of REM statements to indicate what is going on, but in general terms what I did was make the program more "user friendly". For instance I have made it accept upper or lower case letters and give them the same value (A=a=1 and so on), and it will not accept other keystrokes such as numbers and punctuation marks. I have also tried to make it crash proof - the first listing will come up with an error if you hit return without entering any letters and this has been trapped, as has the error which would occur at line 100 if there is no printer on line. I have not trapped the BREAK key to stop it crashing the program as this is the only way to exit from he program without switching the computer off.

TRAPPING ERRORS

Perhaps I had better explain how errors are trapped as I don't think it has come up in these tutorials before. A Trap is a means of protecting against events that would cause the computer to display an error message thus aborting the program that is currently running. The trap is set by a statement like that in line 105. TRAP 210 means "if an error occurs jump to line 210". So in this case if the printer is not switched on the LPRINT in line 110 causes an error, the program jumps to line 210 which displays a message on the screen, waits for a key press and the jumps back to line 105 for another try. If there is no error the program executes line 110 correctly and then in line 115 the trap is cancelled. Line numbers above 32767 are illegal in Atari Basic and will turn the trap off. This allows different traps to be set in different places in the program depending on what errors are likely to occur.

As I write this article I am about to give the homework problem to a friend of mine who is a teacher at Windlesham House School so he can pass it to the boys in the computer club as a competition. We will see who can write the best program to help solve the homework - answers to be submitted before New Atari User is published in January!!

If you have experience of using your Atari to help with homework I would be most interested to hear about it.

Please write to:

Ian Finlayson, 60, Roundstone Crescent, East Preston, West Sussex, BN16 1DQ

```
EI 1 REM ******************************
PI 2 REM *  TUTORIAL SUBROUTINE 20    *
DX 3 REM *     HOMEWORK REFINED       *
LS 4 REM *           by               *
WL 5 REM *      Ian Finlayson         *
ED 6 REM * -------------------------- *
IS 7 REM * NEW ATARI USER - February 91*
EP 8 REM ******************************
NO 9 REM
FD 30 DIM WORD$(20)
TQ 40 WORD$="":TOTAL=0
IL 44 REM ****************************
        TRAP INPUT ERRORS
LA 46 TRAP 200
KJ 48 ? "TYPE IN A WORD (up to 20 charact
ers)"
MB 50 INPUT WORD$
HS 60 FOR LETTER=1 TO LEN(WORD$)
PJ 70 VALUE=ASC(WORD$(LETTER,LETTER))
WT 71 REM ****************************
        SWITCH OFF TRAP
GC 72 TRAP 32000
IF 73 REM ****************************
        CHECK A-Z OR a-z
GN 74 IF (VALUE<65 OR VALUE>90) AND (VALU
E<97 OR VALUE>122) THEN ? :? "LETTERS
ONLY":? "TRY AGAIN":GOTO 40
US 75 REM ****************************
        CHANGE VALUE FOR UPPER AND
        LOWER CASE
IL 76 IF VALUE<91 THEN VALUE=VALUE-64
SO 77 IF VALUE>96 THEN VALUE=VALUE-96
NA 80 TOTAL=TOTAL+VALUE
HL 90 NEXT LETTER
EW 95 ? "TOTAL OF LETTERS IN ";WORD$;" IS
";
MS 100 ? TOTAL
PA 102 REM ***************************
        TRAP PRINTER ERRORS
LA 105 TRAP 210
MY 110 IF TOTAL=100 THEN LPRINT WORD$
JT 115 TRAP 32000
QK 120 GOTO 40
HU 199 REM ***************************
        TRAPPED INPUT ERROR
GH 200 ? "NO, PLEASE TYPE A WORD":GOTO 40
TZ 209 REM ***************************
        TRAPPED PRINTER ERROR
WH 210 ? "ERROR - CHECK PRINTER IS ON LIN
E THEN PRESS ANY KEY":OPEN #1,4,0,"K:"
:GET #1,KEYPRESS:CLOSE #1:GOTO 105
EK 220 OPEN #1,4,0,"K:":GET #1,K:CLOSE #1
:GOTO 40
```

Listing 1 top left - Listing 2 above

THE PERFECT PRINTER?

Dennis Fogerty weighs up cost and features and selects a low cost printer that seems to have everything

In Issue 42 Ian Finlayson stated that, in his opinion, a printer is even more important than a disk drive in increasing the usefulness of a computer. Now, after owning a printer for several months, I can echo his words (although a disk drive certainly speeds things up!). I also wonder why I hesitated so long pondering over the specifications of this and that machine. The crux of my indecision was one question - is the cheapest machine inferior to the middle-priced ones or in any way more unreliable? After all, I only wanted it to print a few words, some figures and perhaps some graphics.

I knew how much I could afford to spend but which printer should it be? With so many makes and types on the market the problem of making the right choice seemed unsurmountable. Owing to the amount of heart/pamphlet/pocket-searching I went through I decided to write this article and hopefully help others who are also undecided.

My printer was required solely for home use. A vintage 800XL, cassette recorder and 1050 Disk Drive has given sterling service but, expanding into databases, spreadsheets and graphics, it became obvious a printed record was necessary. I took the plunge and ordered the cheapest machine on the present-day market; a 9-pin Citizen 120-D, but I do admit to wondering if I was being penny wise, pound foolish. Points in its favour were a 2-year maker's guarantee and it was made in Britain.

I had already purchased the necessary, or so I thought, serial interface. And that was my only mistake. When the 120-D arrived the Owner's Manual informed me that an optional slot-in serial interface is available. Curses! Since then I have seen this model advertised as a standard parallel for £108 or, with serial interface, for £124, both plus VAT of course. So I could have saved at least £16 by not buying what was the cheapest third-party interface!

The manual is ring-bound, very comprehensive and pleasantly free of the usual Japanese/English idioms. The illustration showing location of the ribbon in the print head is the only obscure item. It took me two attempts to get that correct.

Two printer self-tests are built into the machine and output is dependent on selection of the Epson FX character set or the IBM Graphics Printer Character set. Either can be produced by dip-switches. One test prints all the 120-D characters and, at 120 characters per second (Draft), it doesn't take long! Secondly, there is a maintenance self-test which prints rows of the letter H as an alignment check. The Epson FX configuration was my obvious choice and both trials ran beautifully.

Dip switches also select international characters of 9 different countries. The English set I found especially useful for financial papers because the Hash key becomes the pound sterling symbol on printout. Switches are under a sliding cover in front of the ribbon cartridge, but the manual only mentions that the interface pulls out for access to the switches. This can be done of course, but the cover provides quicker access and must save wear on the interface contacts. I assume provision of the slide cover to be more recent than the Manual publication.

For the beginner there are numerous short listings in Microsoft BASIC which, luckily for me, requires little alteration to run in Atari BASIC. Some 27 pages on printing text covers at least 15 fonts ranging from Letter Quality to Reverse Print. Listings are also given for Underlining, Subscripts and Superscripts. I experimented with at least eight fonts and all worked as planned. Page format including variable line spacing and margins follows, and tabulation is dealt with in-depth. For the quick printout Letter Quality, Pica, Italic, Emphasised and Reduced can each be selected with touch-switches on the front panel.

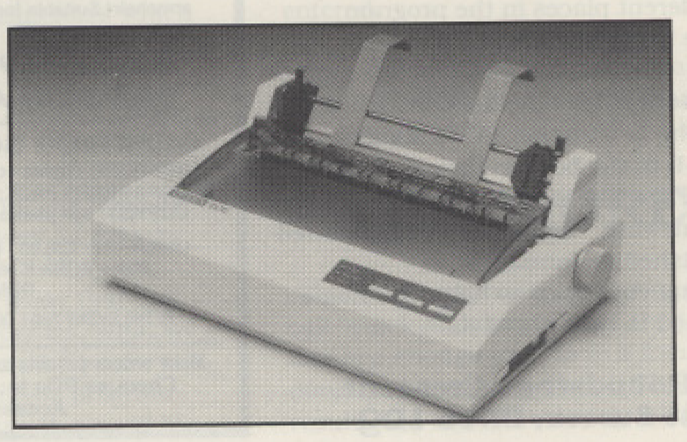
Graphics, and creation of unusual characters, really puts the machine though its paces, but requires advanced programming knowledge. Personally I take the easy way out by using commercial and Public Domain software. However, if you are into scientific symbols or even foreign language characters the information is there, all you need is practice. A de-bugging HEX Dump facility only requires two key-presses during switch-on. Not only does it print the HEX value of every code but also the character, or control code, for each value and, in addition, prints an abbreviation of each control code.

Both a tractor feed for sprocket-fed fan-fold paper and a single-sheet platform with adjustable end stops is supplied. Unfortunately the tractor has to be removed every time you use single sheets, but it is such a doddle it presents no problem. Citizen claim a print head life of some 100 million characters and replacement without the use of tools. It should be some time before I put that to the test.

I believe in giving any new machine a hard initial life. My theory being that this must show up any faults. Unwittingly I added to this theory by inserting some paper too far to the left resulting in the sheet catching on the casing and almost screwing up into a ball before I could switch-off. At other times, because I programmed incorrect control codes, the print head and platen, (the cylinder which feeds the paper), went berserk. Such things happened more than once but, once corrected, the machine functioned perfectly so even though budget-priced it is obviously quite idiot-proof!

By this time you may be asking but what's the final printout like? Admittedly Draft (120 c.p.s) is rather dotty but more than adequate for copies. Letter Quality (20 c.p.s) is excellent, and if used in conjuction with Page 6's Public Domain software, such as Daisy Dot II, it can equal any top quality commercial printing.

So, if you are contemplating buying a cheap, first-time printer don't hesitate!



Despite being one of the cheapest printers around the Citizen 120D is a top class performer and has been highly recommended by almost everyone who has used it

THE ACCESSORY SHOP
ISSUE 48

BARGAIN BOOKS

Books for the Atari 8-bit computers are now becoming very difficult to obtain with almost all the Compute! titles now out of print so we are very pleased to have been able to secure a supply of some of the early British books covering the XL/XE range. Don't be put off by the low prices, we are only passing along the enormous savings we have been able to obtain. All these books are brand new and most are shrink wrapped so you will find them of top quality. If you are interested in programming with your Atari almost all of these books will help in some way and at these prices you can afford to experiment!

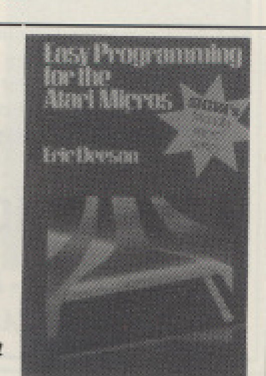
Please note that because of the high cost of posting books orders will only be accepted if the £1.00 postage charge shown on our order form is included.



THE 130XE HANDBOOK

A programming book which covers not only the machine mentioned in its title but also the 65XE, 800XL and earlier models. The book will take you from the first steps in programming up to writing good, structured programs. One chapter is devoted to the sound capabilities of the XL/XE with details of the sound chip itself allowing you to create more sounds than is normally possible with Basic. Four chapters cover graphics including Display List programming, Player Missile Graphics and redefining characters. There are extensive appendices covering Basic commands, Error codes, sound and graphics references and much more. An ideal companion for novice and intermediate programmers.

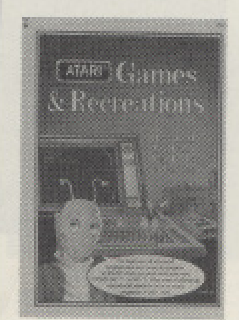
Published price £7.95
OUR PRICE £3.00



EASY PROGRAMMING FOR YOUR ATARI MICRO

This book went out of print 3 years ago and we have been searching for a replacement ever since. We are absolutely delighted to have found more stocks of one of the best beginner's books ever published. Over the past couple of years whenever someone has phoned for a beginners book on programming we have advised then to try and find a second hand copy of this book - now you can buy it once again, brand new! By the end of this book you'll be writing your own programs, including those with full graphics and sound.

OUR PRICE £5.95



ATARI GAMES & RECREATIONS

An American book aimed at the novice programmer that takes you through from the first steps in putting something on the screen to writing your own games with the emphasis on improving your first efforts throughout. There is good coverage of graphics and sound and some excellent appendices covering Error Messages and what to do when they appear plus a complete guide to all the Atari Basic keywords. A good book for children to learn with or for those who want to take the first steps in programming showing that anyone can write their own games.

Published price £14.95
OUR PRICE £2.00

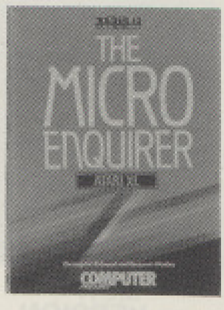


INSIDE ATARI BASIC

Back again but only for a short time! The last time we offered this useful little reference guide to writing you first Basic programs it sold out very quickly and we had to refund many orders. Now we have a few more copies but only a few so if you were disappointed last time try again and you may be lucky. Last chance!

SPECIAL PURCHASE

OUR PRICE £2.50



MICRO ENQUIRER

A large format book that covers the world of micros in general with some specific Atari sections. The book contains a lot of worthwhile background information on home computing and is ideal for those who are recent converts or who want to expand their general knowledge of computers. It covers all sorts of topics including languages, bulletin boards, CAD, Data Processing, Printers, Artificial Intelligence and much more. There are a few Atari specific programs to illustrate various concepts but generally this book will fulfil a need to know more about the world of computing in general. Large format with over 180 pages.

Published price £8.95
OUR PRICE £2.00



BEST OF PCW SOFTWARE

In the early days Personal Computer World magazine published some excellent programs for the Atari in its back pages and included some of the most significant discoveries of the time. Here is a collection of many of those programs ranging from games to utilities presented in type-in format. Most of the programs are explained so you can learn from them and they are all reasonably short so you can type them in quickly. The book concludes with an interesting selection of Hints and Tips for programming and also includes a routine by long time PAGE 6 contributor Paul Lay so it must be good!

Published price £5.95
OUR PRICE £1.50

WRITING STRATEGY GAMES

If you are fed up with simple arcade style games but are not sure of the maths required in writing 'thinking' games like chess here is a book that will help you out. To write games of strategy requires not only a knowledge of programming but also of certain mathematical and coding techniques. This book is pitched at an intermediate level, assuming that you already know some Atari Basic. Machine code programmers are also catered for with many hints on how to modify the routines. The book covers the programming theory behind intelligent games before moving on to practical examples of setting up a chess board, moving pieces and playing through. There are sample games for draughts, chess and other strategy games.

Published price £5.95
OUR PRICE £1.50



ATARI ADVENTURES

An excellent book written by adventure expert Tony Bridges covering adventures in general and showing how you can write your own adventures on the Atari. This book has in fact formed the basis for some of the adventure listings that have been published in PAGE 6. Tony will take you through examples of commercial adventures with lots of background to all different types of adventure and then show you how all these ideas can be put together in your very own adventure. There is a playable adventure listing called The Eye of The Star Warrior to show you just how it all comes together. Everything you need to know to write your first adventure.

Published price £5.95
OUR PRICE £1.50

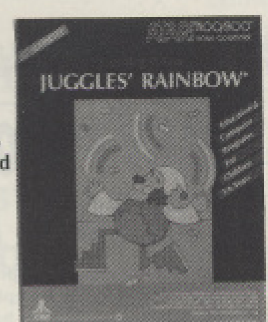
Learn & Play!

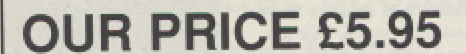
Atari have had produced some real classics to allow you to use your XL/XE for education or play. Here is a selection of the very best that will show you just how versatile your machine is. Some of these titles have not been available for some time and all are top quality programs to bring you fun and excitement with your Atari. Serious or just have fun? It's all here.

ALL ROM CARTRIDGES WILL PLAY ON ANY XL/XE SYSTEM INCLUDING THE XE GAMES SYSTEM

JUGGLES RAINBOW

A first computer learning experience for children aged 3 to 6 that teaches the concepts of above, below, left and right plus letter recognition allowing the child to enjoy learning with colours and music and games they can create and play themselves.





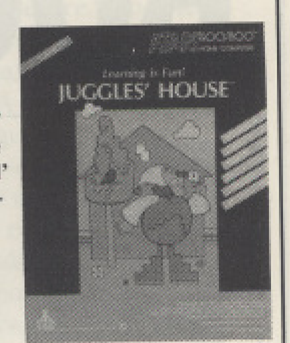
OUR PRICE £5.95

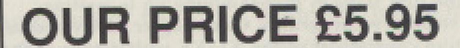
SPECIAL OFFER - PURCHASE BOTH JUGGLES PROGRAMS FOR JUST £9.95

CASSETTE ONLY

JUGGLES HOUSE

Another for 3 to 6 year olds teaching the concepts of inside, outside, upper and lower with Juggles' House and Toyshelf. each game also includes a 'playground' where children can try out these new ideas for themselves.



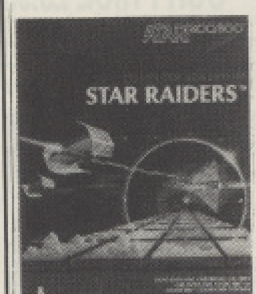


OUR PRICE £5.95

SPECIAL OFFER - PURCHASE BOTH JUGGLES PROGRAMS FOR JUST £9.95

CASSETTE ONLY

STAR RAIDERS



Nothing needs to be said - voted the best computer game of all time and still more playable than almost every game that has followed. Destroy all Zylon ships throughout the galaxy, check long range scans, dock at starbases for refuelling, warp to different sectors and all the time check the galactic charts for Zylon attack. Very few have made it to Commander level. The classic original at a great price. Requires keyboard.

Normally £9.95

OUR PRICE £5.95

ROM CARTRIDGE

MISSILE COMMAND

Another of the all-time classic arcade games that has you defending cities from missile attack. Command the defence guns as enemy missiles rain down from space to attack your cities. Later smart missiles and bombers will appear making the action more and more frantic. For one or two players.



Normally £14.95

OUR PRICE £5.95

ROM CARTRIDGE

CAVERNS OF MARS



Winner of one of the first Atari programming competitions, this was one of the first vertical scrollers and remains a much sought after original game. Descend through the caverns avoiding mines and picking up fuel. Highly playable and addictive, only one or two have made it to the bottom of the cavern to discover the secret that awaits them.

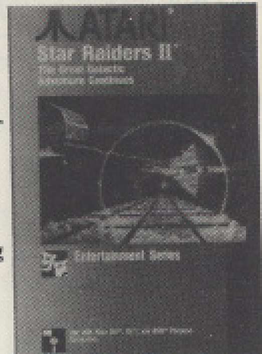
LIMITED SUPPLIES

OUR PRICE £6.95

ROM CARTRIDGE

STAR RAIDERS II

Disk version of this follow up to the greatest computer game. Your mission is to pilot the hottest fighter in the galaxy - the Liberty Star - to destroy the entire Zylon Master Force. Your weapons are: Pulse Lasers, Ion Cannons and Surface Star Bursts. Warp between two systems, protecting friendly bases whilst dropping Star Bursts on the enemy. More great action from where Star Raiders left off.



Normally £14.95

OUR PRICE £5.95

DISK VERSION

SUPER BREAKOUT

Breakout was the original simple yet totally addictive game and this enhanced version will provide even more addictive fun. Several variations on the basic theme are available for one to four players (up to 8 on the 400/800!). *NOTE that this game requires paddle controllers.*

Normally £9.95

OUR PRICE £3.95

ROM CARTRIDGE

TENNIS

Great sports fun either against the computer or another player, singles or doubles. Forehands and backhands, driving approach shots, angled volleys, overhead smashes and tricky lobs - they are all here. You control your position on the court and where you want to hit the ball. The electronic scoreboard dis plays the results. All the action without the sweat!



Normally £12.95

OUR PRICE £6.95

ROM CARTRIDGE



ROM CARTRIDGE

PENGO

You've just landed in Antarctica. Your mission is to help PENGO, the penguin, fight killer SNO-BEES on a battlefield of ice blocks. Just as in the arcade game, PENGO must crush or freeze the deadly creatures before they destroy him. The faster he clears them out, the more points you win! An original game that requires a little more thought than the standard blast 'em up. For one or two players.

Normally £12.95

OUR PRICE £6.95

MILLIPEDE

Centipede was the original, this is the enhanced and faster version in which the bug avoids the bugs! Creepy crawlies like jumping spiders, buzzing bees, bouncing beetles, mosquitoes, dragonflies, inchworms and earwigs add to the fun. You've got to blast fast to get rid of them. Uses joystick or trackball.

Normally £12.95

OUR PRICE £6.95



ROM CARTRIDGE

ROM CARTRIDGE

MOON PATROL

Your beat: Sector Nine, home of the roughest, toughest thugs in the galaxy. You have the finest patrol car on the force, complete with anti-gravity jump buttons and laser bullets, but you'll need more than a hot car in the rough terrain of Sector Nine. Blast UFOs. Leap over landmines. Demolish tanks and jump huge craters and moon rocks - just to survive. Great 3D graphics and good music add to the enjoyment of this addictive arcade conversion.

Normally £12.95

OUR PRICE £6.95

MUSIC PAINTER

An exciting educational program that helps to teach music by using colours instead of notes. Change the fifteen supplied songs to feature different instruments, make the notes longer or shorter or transcribe your own songs. No musical knowledge required to make your own great music. Children or adults alike will get great satisfaction from being able to create their very own music.

OUR PRICE £7.95



ROM CARTRIDGE



ROM CARTRIDGE

SKYWRITER

A learning game for children from 6 to 14 that helps to expand vocabularies by teaching compound words. Whilst flying through the clouds the player has to select two root words that can be linked together to match the definition given. Sky Writer teaches basic word structure and dozens of new definitions as well as spelling and reading skills.

Normally £12.95

OUR PRICE £5.95

TOUCH TYPING

Everyone who uses a computer needs to brush up on their typing and now you can learn to type like a professional typist with this complete tutorial. Touch Typing presents a self paced method of learning by letting you practice typing letters, sentences and paragraphs. The computer determines words per minute, number of errors and your weak points. Random sentences are generated to drill you in those areas. Contains two cassettes and instruction manual.

Previously £19.95.

OUR PRICE £4.95



CASSETTE ONLY



ROM CARTRIDGE

MICROSOFT BASIC II

Now you can use the industry standard Basic on your Atari. An ideal purchase for owners who have learnt to program on other machines. Includes 140 page manual and extended features for disk drive owners. (Can be used with cassette).

Normally £19.95

OUR PRICE £11.95

TYPO ATTACK

A typing trainer based on the Space Invaders concept in which you hone up your typing skills by blasting falling letters. An enjoyable way to learn that will quickly enable you to recognise the keys without having to look at the keyboard.

Normally £12.95

OUR PRICE £6.95



ROM CARTRIDGE



DISK ONLY

SILENT BUTLER

The all round personal finance planner that keeps track of three bank accounts, maintains income records, reminds you of birthdays, anniversaries and important dates and generally keeps you up to date on your financial status.

OUR PRICE £6.95

HOME FILING MANAGER/PAY OFF

DISK ONLY

The Home Filing Manager record keeping system that simulates index cards on your Atari, keeps track of almost anything together with The Pay-Off Adventure - your chance to sample an adventure in classic style. This two disk set also includes some top class graphics demos.

SPECIAL PRICE - ONLY £1
WHEN PURCHASING ANY OTHER ITEM
AVAILABLE ONLY WITH THE PURCHASE OF OTHER SOFTWARE

A Further Selection

More software for your added enjoyment ranging from adventures to arcade games and serious software. Check out Visicalc - we only have a few copies left!

PIRATE ADVENTURE

"Yo ho ho and a bottle of rum ...". You'll meet up with the pirate and his daffy bird along with many strange sights as you attempt to go from your London flat to Treasure Island. Can you recover Long John Silver's lost treasures? Happy sailing matey. Scott Adams Graphic Adventure #2 brings you a superb Beginner's level adventure complete with graphics and ideal for all ages

DISK ONLY

Original price £19.95

OUR PRICE £7.95

VOODOO CASTLE

The Count of Monte Cristo reposes in a coffin in his musty castle, awaiting an able assist from you to remove the curse that binds him to non-life. Is he down for the Count for good, or can you help? Gather your rabbit's footand prepare to step through the portal of Voodoo castle! Scott Adams Graphic Adventure #4 is a Moderate level adventure ideal for those who have had a little experience.

DISK ONLY

Original price £19.95

OUR PRICE £7.95

THE COUNT

When's the last time you awoke in an antique brass bed in a dank, desolate castle? If your answer is "never" you've come to the right place! This marvellous Gothic Adventure will escort you into the weirdling world of a certain well-knownTransylvanian count. Scott Adams Graphic Adventure #5 is a Moderate level adventure ideal for those who have had a little experience.

DISK ONLY

Original price £19.95

OUR PRICE £7.95

STRANGE ODYSSEY

At the galaxy's rim, there are rewards aplenty to be harvested from a long-dead alien civilization. Fabulous treasures ... advanced technologies far beyond human ken ... All this and more awaits the brave galactic Adventurer. But will you be able to recover the wealth and return home? Prepare yourself for a Strange Odyssey! Scott Adams Graphic Adventure #6 is a Moderate level adventure.

DISK ONLY

Original price £19.95

OUR PRICE £7.95

VISICALC

The world famous Visicalc spreadsheet available for your Atari. Visicalc will take care of all of your spreadsheet requirements with all the arithmetical functions you could want on a spreadsheet that is 63 columns wide by 254 rows deep. All major spreadsheet functions are supported and the program even allows split viewing windows. Priced at £159.95 when first released!

DISK ONLY

OUR PRICE £11.95

TIMEWISE

Why not use your Atari as an electronic diary? Timewise allows you to keep track of all your appointments and important dates on a daily, monthly or yearly basis. Now you can dispense with your diary and let your Atari do the work. If you have a printer Timewise allows you to print out the information in a variety of ways.

DISK ONLY

Originally £22.99

OUR PRICE £7.95

PLANETARIUM

Fun or education? Both really in this fascinating look at the heavens. Over 1200 stars, 88 constellations, the solar system and more than 300 deep-sky objects are depicted in this program that allows you to view the universe. You can make stellar and planetary maps, study eclipses, learn about latitude and longitude and much more.

1050 DRIVE ONLY
Please state when ordering if you have a US Doubler fitted

Normally £16.95

OUR PRICE £6.95

PROOFREADER

Users of Atariwriter will be delighted with this, the long lost spelling checker for the Atariwriter cartridge! Proofreader may be loaded alongside Atariwriter to give you instant access to a dictionary of 36,000 words. If that is not enough you can add your own words as you go. Errors are highlighted on screen for correction, unusual words can be saved and you can look up spellings.

DISK ONLY

OUR PRICE £5.95

HARDBALL

American League baseball at it's very best. A highly regarded game - check out the review in Issue 45 'THE best sports simulation on the Atari'. Look over the pitchers shoulder as he throws the ball to the waiting trio of batter, catcher and umpire. In HardBall you can hit, run, steal, blunt and dive, change the fielders and do everything you can do in the real game. For one or two players.

ROM CARTRIDGE

Normally £14.95

OUR PRICE £7.95

ARCHON

A chess-based game with the forces of Light and Dark doing battle on each square. Cast spells and missiles to gain squares and eliminate your opponents pieces. Your magic rises and ebbs with the board's luminosity cycle. As the light changes, so does your power. You must race against time and use your strength effectively. A truly original game that is difficult to explain. One or two players.

ROM CARTRIDGE

Normally £14.95

OUR PRICE £7.95

MACRO ASSEMBLER

The Macro Assembler will allow you to create your own machine language games and applications five times faster than with the Assembler Editor cartridge and it can assemble as many as 1600 symbol definitions with no limit on program size. You can duplicate code, optionally assemble code and modularise your program. A Program-Text Editor is included.

DISK ONLY

Normally £19.95

OUR PRICE £7.95

BASIC CARTRIDGE

Why would you want a Basic Cartridge when Basic is already built in to your machine? Well some programs, especially some early public domain programs won't run on the XL/XE but they will if you plug in the old version of Basic. Much more convenient than having to boot in the old Basic from disk and, at this price, worth having just as a backup.

ROM CARTRIDGE

OUR PRICE £3.95

POLE POSITION

The ultra-realistic graphics and sounds of the Grand Prix explode into your living room in this computer version of the classic arcade hit. Complete a lap in qualifying time, then take on the Fuji raceway and competing drivers in a high speed race. One of the all time classics.

ROM CARTRIDGE

Normally £12.95

OUR PRICE £6.95

GALAXIAN

Another arcade conversion that retains all of the addictiveness of the original and still stands as one of the all time classics. Blast the galaxians as they advance in formation and peel off to attack. With one or two players and 10 skill levels you'll be entertained for a long time. Includes an easy option for beginners.

ROM CARTRIDGE

Normally £12.95

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American Football is now a big craze in this country and you can now play at home. Outsmart the defence, pass with amazing accuracy, run with speed and agility, make tackles, select offensive and defensive plays and more. You can take on the computer in a practice game or challenge a friend to a dramatic video bowl game of your own in a packed stadium. All the thrills of the gridiron.

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JOUST

Don your helmet and hoist your lance and climb aboard an ostrich in this unusual arcade game! Do battle with the evil Buzzard Riders in deep space. Pterodactyls to the right of you, alien eggs to the left, you must learn to fly so that you won't die so very far from home. All the arcade thrills for one or two players.

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RESCUE ON FRACTALUS

Ask old hands what was one of the best games ever for the Atari and a good proportion of them will say Rescue on Fractalus. This game from Lucasfilm set new standards in computer games combining a space flight simulator with a rescue mission. Super, ever changing, 3-D scenery as you fly through the mountains to land on the planet and rescue stranded pilots.

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BALLBLAZER

Another from Lucasfilm, this top quality split screen game takes place in a games arena of the future. You are strapped into a Rotofoil hovercraft-like vehicle that skims over the surface of the playfield at 50 metres per second. The object is simple, just release your Plasmorb through your opponent's goal. Two-player simultaneous play with first person perspective for both players.

ROM CARTRIDGE

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BATTLEZONE

Another cracking arcade conversion that set new standards. You command a tank on the battlefield under attack from enemy tanks and flying saucers. You can manoeuvre through 360 degrees as the enemy attacks from all directions. Watch your radar, turn and blast as the enemy approaches at speed. It takes nerves of steel. One player, five skill levels.

ROM CARTRIDGE

Normally £14.95

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STAR RAIDERS 2

The original Star Raiders is updated with better graphics and sound. Your job is to clear each sector whilst ensuring that the enemy do not overrun planets in another part of the galaxy. It will take skill in deciding which sector to warp to, can you afford to clear a sector or will you have to leave to defend a planet and return later! A great follow up to an all time classic.

ROM CARTRIDGE

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LODE RUNNER

Another classic, perhaps the best of all platform games. You are a highly trained Galactic commando deep in enemy territory. Your mission is to infiltrate all 75 of the enemy's subterranean levels to recover every last piece of gold. You are equipped with a laser drill pistol but you'll need cunning, speed and agility. Lode Runner includes a unique extra that allows you to create your own levels.

ROM CARTRIDGE

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MIDNIGHT MAGIC

Pinball on your Atari can become totally addictive as thousands on addicts to the famous Pinball Construction Set will testify. Now you can join in the fun with David's Midnight Magic, all the thrill of the pinball table on your screen. There are flippers, bumpers, drop targets and you can even 'shake' the machine. All of the action,of real arcade pinball for up to four players.

ROM CARTRIDGE

Normal price £14.95

OUR PRICE £6.95

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ROM CARTRIDGE

Normally £14.95

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ROM CARTRIDGE

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A version of the classic Blue Max that finds you flying across the desert Indiana Jones style searching for hieroglyphics hidden in the desert sands. You need to survive long enough to destroy the howling Sphinx. The longer you survive and the further you proceed, the more perilous your mission becomes. If you destroy the Sphinx you get to gain the bonus round for even higher points. Four levels.

ROM CARTRIDGE

Normally £14.95

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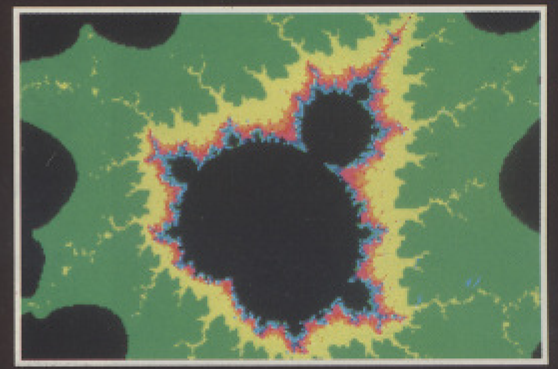
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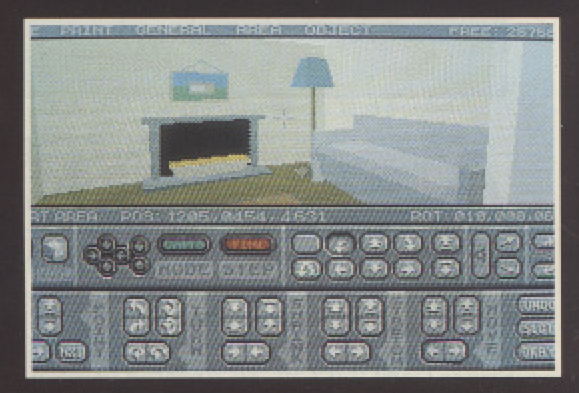
Let's get away from games for a while and even away form the ST! Many computer users have become interested in Fractals following numerous articles (including in NEW ATARI USER) and now a company has been set up that deals exclusively in fractal related material. The company is Frachaos and they have produced a catalogue of products available entitled The Catalogue of Chaos which includes many goodies not previously available in the UK. The company is the brainchild of computer artist and lecturer in Computer Graphics, Jake Davies who says "Since the Equinox program a couple of years ago there has been a rapidly growing interest in fractals and chaos, not only in mathematics and the sciences, but also in entertainment and fashion. Unfortunately it's been hard to get hold of the best products in the UK and that's why we set up Frachaos". The company aims to cater for the beginner and enthusiasts alike with a compilation of videos, books, shareware, fine art prints as well as commercial software. They will also provide a 'made-to-measure' service producing unique packages for education and enthusiasts. If you want a copy of the catalogue, it's yours for the asking. Just drop them a line at Frachaos, Higher Trengove, Constantine, Falmouth, Cornwall TR11 5QR or give them a ring on 0326 40973 (24 hour answerphone).

Anyone got a Psion Organiser as well as an ST? Widget Software have a product called TRANSFILE ST CL which allows data to be transferred quickly and easily between the Psion Organiser II and the ST. They claim this is the only program available that uses the special protocol which Psion developed to allow the Organiser to communicate with the Mac and PC. The price is £49.95 and you can get more information from Widget Software Ltd., 121 London Road, Knebworth, Herts. SG3 6EX. Telephone number is 0438 815444.

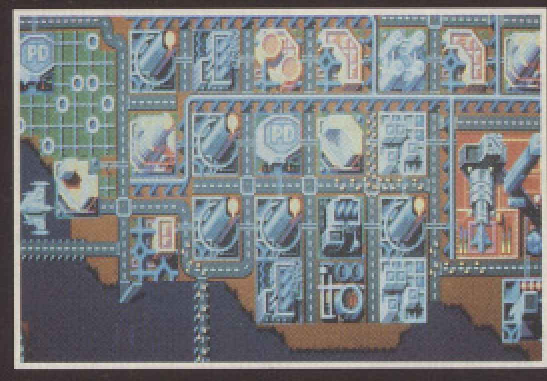
Okay, it's back to games now. Domark are now giving you the chance to stop buying their games and create your own with the 3-D CONSTRUCTION KIT with which you can create arcade, adventure or simulation games based around the 'Freescape' principle used in games such as Castle Master. Sounds very interesting but you'll have to wait till around April to try it out. Codemasters are repackaging some of their games in 'QUATTRO' boxes which look really neat and sell for £12.99. QUATTRO SPORTS includes BMX Simulator, Italia 1990, Advanced Ski Simulator and Pro Tennis Simulator while QUATTRO ARCADE features Pro Powerboat Simulator, SAS Combat Simulator, Pub Trivia Simulator and Nitro Boost. Fans of Infocom can come out of mourning with the news that Mastertronic, of all people, have bought the rights to Infocom games and have released Hitchhikers, Planetfall, Zork 1, Wishbringer and Leather Goddesses of Phobos all for just £9.99 each. That's good news. Maybe they'll release some of the games that didn't make it onto the ST. Unlikely, but at least there's now a slim possibility of seeing some more Infocoms. Let's close with some news from U.S. Gold. Strider 2 is on its way along with a whole host of stuff promised for 1991. Chip's Challenge is a wacky arcade game in which you seek to become a member of an exclusive computer club by zapping everything in sight. Cruise for a Corpse is an adventure set on board a 1920's 3-masted yacht, a sort of Murder on The Orient Express at sea. If you are a fan of Indy Jones or Darth Vadar or Zak McKraken or Luke Skywalker or R2D2 then you can meet them all in Night Shift which is set in a toy factory. From Lucasfilm comes a follow up to Their Finest Hour. Being an American company they can't let you believe that the British won the war so in The Secret Weapons of The Luftwaffe you'll discover how the United States 8th Air Force were really the ones responsible for stopping Germany. Another one from Lucasfilm is The Secret of Monkey Island, a tale of pirates in the Caribbean set in the late 1600's. And there's a lot more promised from U.S. Gold but we'll have to call it a day. See you next time.



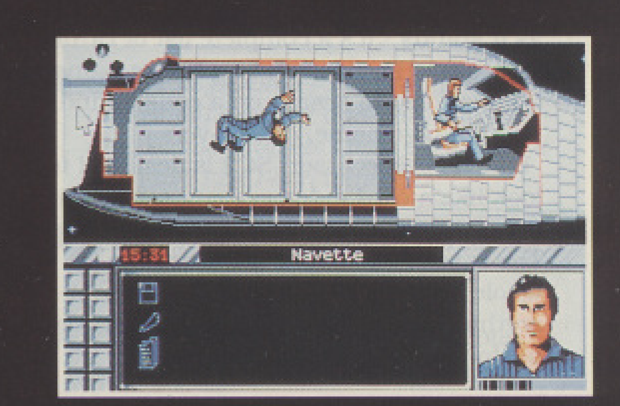
THE MANDLEBROT SET available from Fractal Chaos



3D CONSTRUCTION KIT - design your own programs with Domark's help

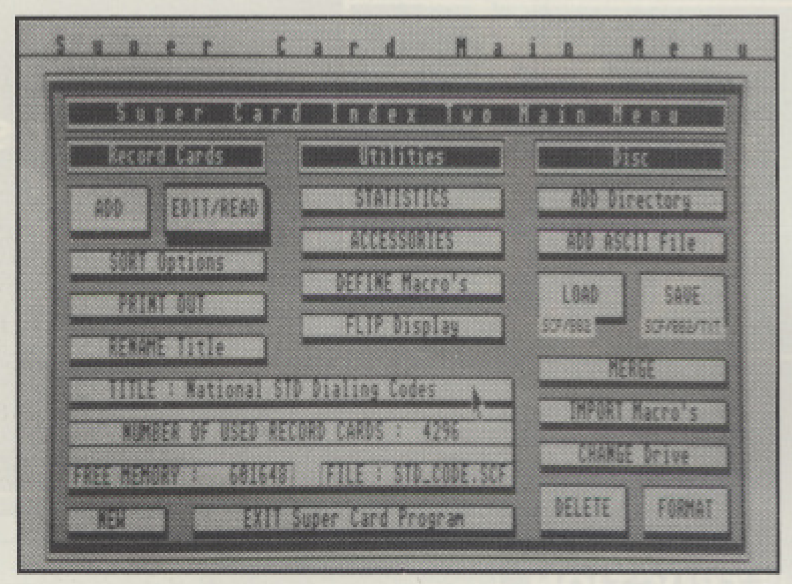


FUTURE EUROPE - one of the enhancements to Sim City mentioned last issue



MURDER IN SPACE - another from the prolific Infogrames

SUPERCARD 2



A few issues ago I reviewed a great little database program called Super Card Index from B.Ware Software, which was a development of an earlier B.Ware database product called B.Base 2. B.Ware have now taken things another step forward with the release of Super Card 2 (SC2), an uprated version of Super Card Index incorporating improvements suggested by users of the previous version. There's a whole host of these, but the main changes are in the areas of "data filtering" for record selection, data sorting, report printing, and disk cataloguing. This last item allows disk directories to be read directly into SC2 records, automatically building a database of the contents of all your disks!

The program is supplied complete with a number of example files. Not only do these give you something to play with straight away for familiarisation purposes, but they can also act as models for your own applications. They include such subjects as names and addresses, customer details, compact disc collections, etc. One of them can even be used as it stands - it's a complete list of British Telecom STD codes and exchange names, allowing you to search on a code to find its exchange name, or vice-versa.

Like its predecessor, SC2 is designed to look like a card index system, something everyone can easily understand and use. The ease of use theme pervades the whole program in fact, with virtually everything accessible via friendly selection buttons or keyed menu items.

FREE FORMAT DATA

As before, SC2 uses free format data records, so you can enter new data by simply keying it onto the screen, laid out however you wish. To help with data input you can assign frequently used character strings to each of the ST's Function Keys and later input them with just a single keypress. Also, those Function Keys can now be used anywhere in the program rather than just for data input. The program will now also read and write ASCII files and files produced with Super Card Index or B.Base 2 - without the need for the separate utility program supplied previously. Merging and splitting of files is easily achieved too.

Theoretically SC2 can handle files of up to 32000 records, each one up to 32700 characters long. However, any file worked on is held completely in memory, which means the practical limit is dependent on how much memory your ST has. 512K should be adequate for most home and small business uses though, and one megabyte certainly so.

Once you've created a file you can then use all the usual database functions on it. Selection of records to work with may be achieved manually by paging through them, or automatically via SC2's record "filtering" facilities. These allow you to find all records matching certain specified search criteria, consisting of strings of characters connected by logical operators, for instance to find all records containing the words "Atari" OR "IBM".

Up to nine strings each of up to 30 characters may be specified, with each string qualified by AND or NOT operators. This permits the selection of records NOT containing the specified string in addition to the normal selection method. The nine strings are split into two groups, of five and four strings respectively. Within each group the filter logic for each line may be modified to use AND or OR, as can the logical relationship between the two groups. If required, the search can be restricted to a chosen range of records, e.g. records 57 to 132 in the file; and a case sensitivity option allows differentiation between upper and lower case text. Once again, these facilities should be adequate to cope with most requirements intended users are likely to have.

AUTO BROWSE

The filtering process produces a subset of records matching the search criteria, which you can then step through and display, change, delete, add to, copy, save to disk, or print as required. There's even a timer driven browse facility, which automatically pages through the record subset without the user having to touch any keys!

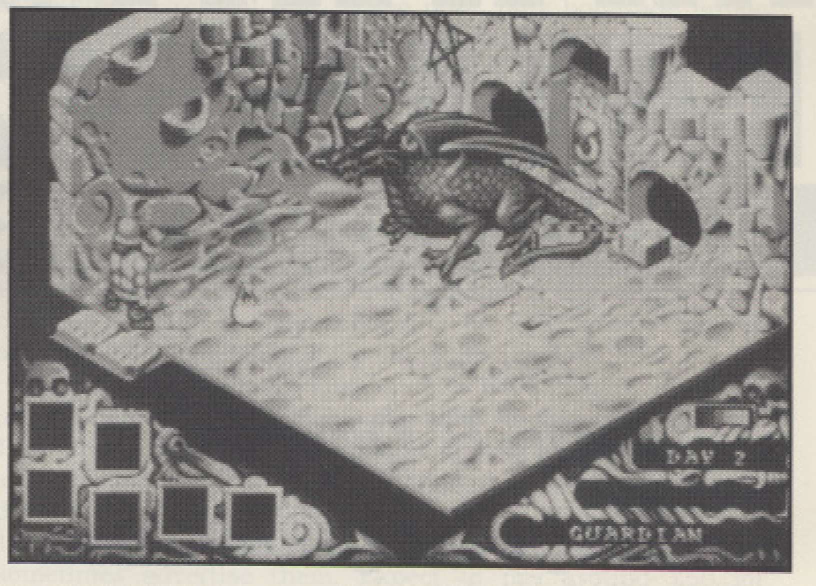
Because of the free format data, report printing facilities are fairly limited. You can print single records or a subset defined by the search criteria. Within a record, print formatting is restricted to specifying the subset of lines you want printed. However, the overall appearance of the report layout can be specified, in terms of characters per print line, print lines per page, spacing between records, and type of heading required. Also, SC2 now has the facility for sending setup codes to your printer before printing begins, allowing you to specify fonts, spacing, margins, and so on.

The original Super Card Index was an excellent program, but this latest incarnation is even better! It's very easy to use, fast, reliable, and great value for money. If you're looking for a program to handle those small database applications needed for home, school, club, or small business use, then make sure you check it out. You'll probably find it's perfectly adequate for your needs.

Title:	**SUPER CARD 2**
Publisher:	**B.Ware Software**
Price:	**£29.95**
Reviewer:	**John S Davison**

CADAVER

BEST GAME OF 1990!



Cadaver is probably the first REAL Graphics Adventure! Forget Sierra with their cute animation, and slow loading pictures. Forget Magnetic Scrolls with their superb text adventures with the irrelevant add-on graphics. This is where it is really happening! (No, I haven't played Wonderland yet, and I'm sure it will be wonderful - but this is very different!).

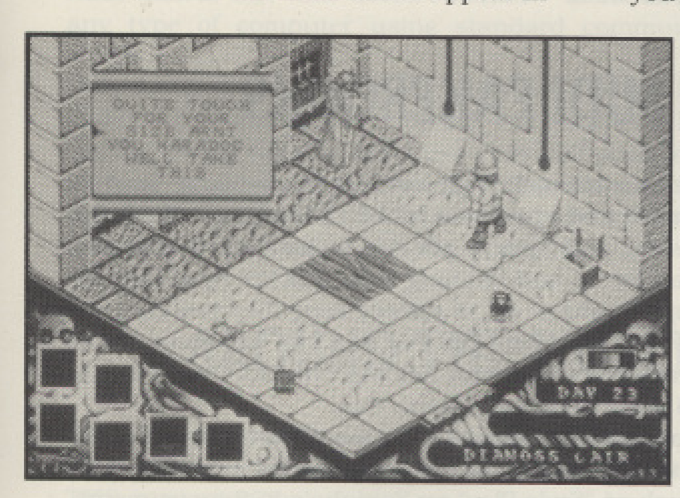
Cadaver is a joystick driven arcade adventure which just oozes quality at every turn. Apparently the amazing Bitmap Brothers decided that they would like to cross-over the different styles of adventure and arcade games and Cadaver is the result.

You control Karadoc the dwarf in his quest to destroy the evil Necromancer (what? another one!). You start empty-handed in the depths of the castle dungeons and must fight and puzzle your way through hundreds of rooms across five levels to reach the final confrontation.

It take a few minutes to get used to the movement as the rooms are viewed in 3-D from an angle so that the dwarf moves diagonally, and you also need a little time to get used to the button: normally it means JUMP, but if you are Wielding a Weapon it means ATTACK (or THROW if it is not a Weapon), and if you touch something or bring up your inventory then the button is used to select an action from the icons which appear in the bottom left. Don't worry - you get used to it very quickly and the system is actually very easy to use and very efficient in allowing you to get around, fight, and use objects.

The icon interaction is well designed in that only icons which are relevant to the item you are touching or holding appear - depending on those objects you may get to choose from: SEARCH, TAKE, DROP, DRINK, READ, HOLD, CAST, SWITCH, PRESS, OPEN, INSERT, PULL, EAT and GIVE. And believe me, this turns out to be quite an adequate set of verbs to generate LOTS of interesting and challenging puzzles. You only need to touch the keyboard to use an item from your inventory or to Un-Wield a weapon.

Most levels have 80 or 90 rooms to explore, and movement between them is instantaneous. Fortunately the game draws an onscreen map for you - press F1 to see all the rooms you have visited - so you don't need to draw detailed maps. There are scores of different items to find, most of which have a use, plus dozens of magic spells and potions. Some problems you need to fight your way through, some you will need arcade skills to jump and dodge around deadly obstacles, others you can only solve by using magic, pulling the right lever, finding the right key, or performing some obscure action such as throwing things at remote targets or pushing lettered tiles around the floor!



To fight something you can either walk into it (losing some hit points in the process), attack it with weapons such as bags of stones, shirikan or magic missiles, or cast spells such as Massacre or Mind Blast. Some of the enemy are stationary so you can stand out of range and work out how best to attack, others chase you round the room so you have to dodge as well. Fortunately you can SAVE to diskette provided you have enough money to pay the gods! Initially this is quite cheap and the coin on the ground in the first room (worth 7 gold) is enough to make your first save; saving on the last level can cost you over 1000 gold! (Look out for the chest on the second level with infinite gold in it!) You can LOAD as many times as you wish from any saved position so you get plenty of chances to try the amazing variety of problems whether they are arcade, logic or violence based!

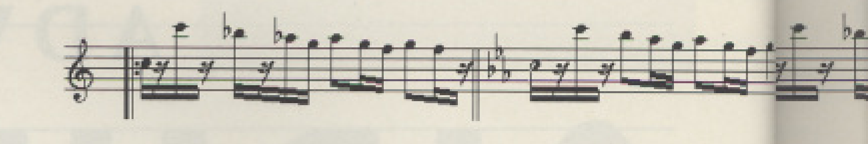
Cadaver is not an endless bout of blasting, it is a game of exploration and experimentation with a little mapping and occasional short bursts of mayhem.

If you like arcade games with a challenge then you will love Cadaver. If you like text adventures and have always believed that graphics were just a gimmick then Cadaver could change your mind - this is every bit as challenging as most adventures I have played and you will be amazed at the variety of enigmas which they crammed into it. My solution takes up SIXTEEN pages of text!

Most people are highly likely to get stuck at least a couple of times, but never fear the Guiding Light (0898 338933) have a full solution (and many thanks to Jackie and Darren for the couple of times that I got stuck!). Double-sided diskette drive required - if you have been looking for a reason to buy one then this could be it!

- ***SIGHT & SOUND*** - *The graphics are amazingly detailed and vary considerably between levels - how they cram it all in to 512K I don't know!*
- ***GAMEPLAY*** - *Brilliant - a great arcade game - a great adventure!*
- ***VERDICT*** - *You'll never forgive yourself if you miss this one!*

Title:	**CADAVER**
Publisher:	**Image Works**
Price:	**£24.99**
Reviewer:	**John Sweeney**



MAKING MUSIC WITH YOUR ATARI

BAND-IN-A-BOX

John S Davison's regular guide to all the ways of making music on your favourite computer

I must tell you about a real fun piece of music software I recently got my hands on! It's called Band-In-A-Box, by PG Music of Buffalo, USA, and its purpose is to help you rapidly produce a professional sounding accompaniment for virtually any song. The principle behind it is very simple - you tell it the chords to a song, where the chord changes occur, and the musical style in which you want the song played. In a few seconds it generates a complete three part arrangement for drums, bass, and piano (or whatever other sounds you wish to assign), and plays it via a MIDI attached synthesiser.

The program produces an incredibly good sound - so good you could almost believe there's a professional backing band in the room with you! All YOU have to do is play or sing the main melody line of the song to complete the musical performance. It's a simple idea, but it opens up all sorts of possibilities, as we'll see later.

The full version of Band-In-A-Box runs in medium or high resolution and needs 1MB memory, but there's a simpler 512K version provided which handles fewer styles and shorter song length. Even so, it's still very usable. Obviously, to play the sounds it also needs a MIDI synthesiser keyboard or expander module, preferably one which can also play drum sounds. However, it will happily drive a separate drum machine if required. The program can be easily customised to work with virtually any synthesiser and mapped onto any synth drum section or drum machine. It worked perfectly with my Yamaha PSS-680 after a few minutes customisation.

MUSIC SPREADSHEET?

To create a song arrangement you just type chord names into cells on the program's spreadsheet-like data input screen. This uses standard chord naming conventions, e.g. C for C major, Cm6 for C minor sixth, etc. It handles a very wide range of chord types, including some really exotic ones! How about C13sus#5#9#11, for instance? It also handles chords with alternate bass notes, for example F#/A (F sharp major with an A bass). Up to four chord changes per bar may be specified, more than adequate for most songs.

To add further interest to the arrangement the program can switch between two contrasting variations on the chosen style. You flip from one to the other by placing markers at appropriate points in the music. Each transition is preceded by a drum fill, thus contributing even more variety to the basic rhythm.

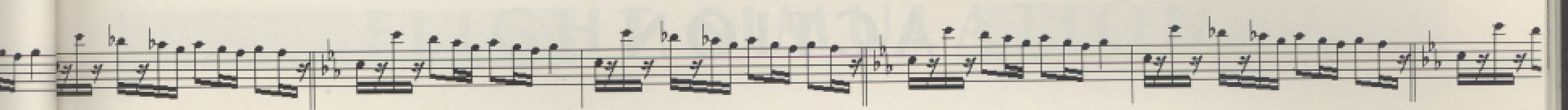
Finally, you specify miscellaneous "song" data, such as song title, tempo, key, looping information for handling multiple verses/choruses, and the musical style required. The full version of the program handles 24 different styles, with 14 in the 512K version, including various flavours of country, Latin, rock, blues, reggae, jazz, and pop. The accompaniment parts are regenerated each time you play the song, so between playings you can change the style, transpose into a new key, edit the chord sequence, and alter the tempo if required, giving scope for easy experimentation.

Song files you've created may be saved to disk in their native format or as a Format 1 standard MIDIfile. This means you can then load them into a sequencer or other software package which supports MIDIfiles and further modify or augment them in any way you wish.

MIDI FAKEBOOKS

The program is extremely easy to use. Once you've learned how to customise and operate it (all of 15 minutes effort!) you can enter a song and have it playing in just a few minutes! In fact you can be up and running even quicker than that, as it comes complete with a set of sample song files you can just load and play. What's more, you can buy two accessory "MIDI Fakebook" disks, between them holding over 500 ready to use jazz and pop song accompaniment files.

This program could be thought of as a software version of the advanced auto-accompaniment features found on some MIDI keyboards, such as "Style Play" on Yamaha's PSS instruments. In fact, it's not quite as advanced as those yet, as a few features seem to be absent. The ones I missed most are nice clean intro and ending phrases fot each of the styles - Band-In-A-Box songs currently terminate too abruptly for my taste. It would also be nice to have one or more additional instruments playing optional "twiddly bits", again as on the PSS keyboards. Finally, being able to define your own styles would add enormously to the program's flexibility. PG Music are



already planning improvements to the program, so perhaps we'll see these features in a later release.

Band-In-A-Box has a far wider range of application than you might at first imagine. It's obvious use is to enable anyone (novices included) to quickly produce an accompaniment for any song, which they can then play or sing along with. It could even be used in live performance, for instance a singer could use this program plus a MIDI synth instead of a live backing band! Yes folks, a computerised karaoke machine! Music teachers will love it too, as it's great for practising ensemble playing. It's also a useful personal learning aid, as during playback an onscreen piano keyboard shows you exactly what the bass and piano parts are playing - in real time.

I believe Band-In-A-Box is destined to become a classic piece of music software. It's friendly, genuinely useful in all sorts of ways, and tremendous fun to use. It's reasonably priced too, at £45 for the basic program and £20 each for the MIDI Fakebooks, with special deals if you buy more than one item at once. UK suppliers are Zone Distribution, 5 Abbeville Road, London SW4 (phone 081-766-6564).

THE MUSIC STUDIO UK

Wouldn't it be nice to find a place where computer musicians could meet 24 hours a day, seven days a week, to swap ideas, information, public domain music software, MIDI files, voice patches, develop contacts, and generally discuss anything to do with computer music making? And what if all this were available for FREE? Too good to be true, you say? Well it's not - all this and more is now available through a new service offered by computer music enthusiast Paul Urmston of Manchester.

Paul is the Sysop (System Operator) of The Music Studio UK, a computer based bulletin board service available free to anyone equipped with a computer, telephone, and communications facilities. Although no access or usage charges are levied you do have to pay for phone calls, but these are at normal extortionate BT rates - NOT those ultra-extortionate 0898 number rates. The service runs on a high powered IBM PS/2 model 80 PC with a massive 450 megabytes of hard disk storage, communicating with the outside world via a Miracom Courier HST modem at speeds up to 9600 bps. OK, so it's not Atari based, but that doesn't matter - it communicates with any type of computer using standard communication protocols.

For those unfamiliar with such things a bulletin board system is like an electronic notice board. You contact it by dialling in via the phone system, then use your computer as a terminal to read or post public messages; receive and send private electronic mail from/to other users; and transfer programs and data files between the two computers.

AROUND THE WORLD!

TMS has separate message areas for different topics, such as MIDI, Music, Buy and Sell, and yes, Atari. Anyone dialling into TMS may view any public messages you leave and reply to them, and the replies are also available for all to read and respond to. It's possible for a message to spark off a multi-way conversation between many different users, and is a great way swap ideas or obtain help with music related problems. TMS is network connected to other bulletin board systems in the UK, Europe, and elsewhere, and exchanges messages with them on a daily basis, so your messages could reach a wide audience!

FREE SOFTWARE!

TMS also has file download and upload facilities. These allow you to access any of the music software or data files stored on TMS - and all for free! Well, there's no cash charge, but you are eventually expected to do the decent thing and upload something in return! And please note: only bona-fide public domain, shareware, and demo material is accepted - NOT pirated commercial products!

So, how do you participate? Well, basic requirements are a modem to connect your computer to the telephone system plus suitable software to handle the communications. To minimise your phone bills I'd recommend you use the fastest modem you can afford, with 1200 baud as a minimum if you want to do much downloading/uploading of files. Expect to pay at least £150 for this, less if you buy secondhand. It may sound a lot, but you can also use the modem to explore the hundreds of other bulletin boards now operating in the UK.

A modem plugs directly into an ST's RS-232 port, but 8-bit users will additionally need a separate RS-232 interface box. The only suitable devices I know of are the Atari 850 interface and ICD's P:R:Connection, neither exactly easy to find these days. Watch for secondhand items or try Gralin International, 11 Shillito Road, Parkstone, Poole, Dorset BH12 2BN, who sometimes advertise them. Expect to pay around £50 for either. Incidentally, both devices also provide a parallel printer interface, allowing your 8-bit machine to use virtually any type of printer instead of being tied to Atari only models.

The software side needn't cost much, as you can use public domain communications programs. On the ST there's VANTERM, while 8-bit users could consider AMODEM - both are available from the Page 6 PD Library for just £2.95 each. 8-bit users could also use Mini-Office II, now available from Page 6 for just £14.95, although its upload/download features aren't exactly state of the art.

To try TMS just dial 061-727-7164, and when connected, simply follow the onscreen prompts to register yourself as a user. If you do, please remember that a free service such as this only thrives through ACTIVE participation of its users. Make sure you leave a relevant message or upload something useful to help TMS become a service worth using - and to thank Paul Urmston for the voluntary effort (and money!) he's put into getting TMS on the air.

SNIPPETS

....there seem to be plenty of Casio synthesiser bargains around as I write this, particularly MIDI expander modules. Examples are the CSM-10P Piano and CSM-1 synth expander modules at well under £100 each. Check the current music technology magazines for details.

....another good buy, but more upmarket, is the new Evolution Synthesis EVS1. It's a 100 sound, 16 voice polyphonic, eight way multitimbral expander module, with built-in sampled drum sounds. It's supplied complete with patch editing software for the ST, and looks great value for £299.

....Yamaha's new £150 DD11 drum machine looks perfect for the home MIDI setup. Its specification includes 100 preset rhythms; 35 sampled drum sounds; MIDI IN and OUT; and unusually, eight large, velocity.sensitive drum pads which you can bash with real drumsticks to actually play the drum part!

....news from the USA: Charles W Pinter tells me that his report in Issue 45 of a new stereo version of AMS (Advanced Music System) for the 8-bit machines was incorrect. It should have read AMP (for Antic Music Processor) rather than AMS. More details next time, if Charles can obtain them! ●

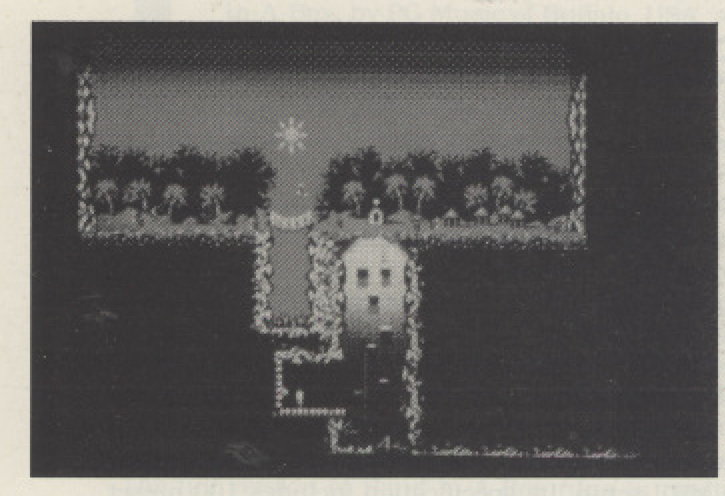
GOLD OF THE AZTECS

For 400 years no-one has dared to take up the toughest challenge man has ever known - to find Quetzacoti's Gold of the Aztecs. You are Bret Conrad, a man trained by special forces, a man who knows danger as a way of life. All he has to aid him in his quest to find the mystical gold of the Aztecs is a 400 year old Spanish map of the area, showing the location of a temple. The map also tells of immense danger which must be faced, of how 300 Conquistadors died in the previous attempt to enter the tomb.

The game begins as you parachute deep into the middle of the jungles of Mexico, hundreds of miles away from civilization, or even the nearest road. As you land your parachute becomes caught amongst some trees and you must cut yourself free and then move on into the deep jungle to do battle with all that steps into your path. As you move through the jungle you soon come across spear throwing natives and hostile wild animals, which must be avoided in order to keep on and reach the temple. The deeper you go, the stranger your adversaries become, ghouls and monsters attack you at regular intervals as you get closer and closer to your goal.

Gold of the Aztecs has been severely hyped as an enormous game which took three man years of development, with stupendous numbers of frames of animation and even more gigantic numbers of little graphical bits and bobs but what does this quite extraordinary, superlative-defying game have to offer for the average gameplayer? Well, it's a fairly mediocre arcade adventure which is far too difficult to play due to the dreadful control response, but it has got some reasonable graphics. Now maybe I'm missing something, but the hype on the box, and the game inside only seem to have a few things in common! The graphics are all right but if this is the best they can do with "8 megabytes of code and data" then I'm glad they haven't done anything smaller!

You control Bret with the joystick, as you would expect. He is a large character who is well animated and you can command him to run, jump, pick things up, shoot a gun, use a knife, and other such things. You have to move him around the various screens trying to get past the things in his way. Eventually you must get him from the jungle into the tomb beneath the temple to search for the treasure. Now, normally an arcade adventure of this type, with only around eighty screens or so would be a doddle to get reasonably far into. However, do not expect to get anywhere the first time you play! It is very difficult at first to get past the first two or three screens, simply because 'Bret' in his incredible 'macho-ness' is an absolute pig to control! I tried with a number of different joysticks and the response is simply horrific. If you have quick reactions, this game will infuriate you as it reacts about three seconds after you do!



In terms of presentation, the game is quite good, the graphics are of a fairly high quality and they are suitably varied from screen to screen. In places the animation is worthy of note, such as the lumbering elephant which crushes you if you spend too much time on the first screen! The sound effects are very good indeed and are possibly the best feature of the whole game. The crack of the pistol shots to the hiss of a snake are all very realistic. However, great sound effects alone do not make a great game.

What is more infuriating than anything is that this could be such a good game. If only it was easier to control it would be simply superb. However, it would appear that yet another game has been ruined by far too much attention being focused on the cosmetic features and not enough on the actual gameplay. I found that all it managed to do was infuriate me. A game should not really do that, it should be a form of entertainment or escapism, not something that makes you want to hurl your joystick through the monitor screen!

Overall then, as you can probably tell, I was not entirely impressed with Gold of the Aztecs. The graphics and sound are quite good, but the game is far from original and it is practically unplayable. I don't particularly like it, but you may well think it's brilliant. It is definitely not worth all the hype which has been spouted about it.

- ***SIGHT AND SOUND*** - *Graphics are colourful and well drawn and the sound is superb, but these alone do not make a good game.*
- ***GAMEPLAY*** - *When I find a measurable degree of playability I will let you all know.*
- ***VERDICT*** - *All hype and no substance. The potential is definitely there, but if a game is so unplayable why bother with it?*

Title:	**GOLD OF THE AZTECS**
Publisher:	**US Gold**
Price:	**£19.95**
Reviewer:	**John Davison jnr**

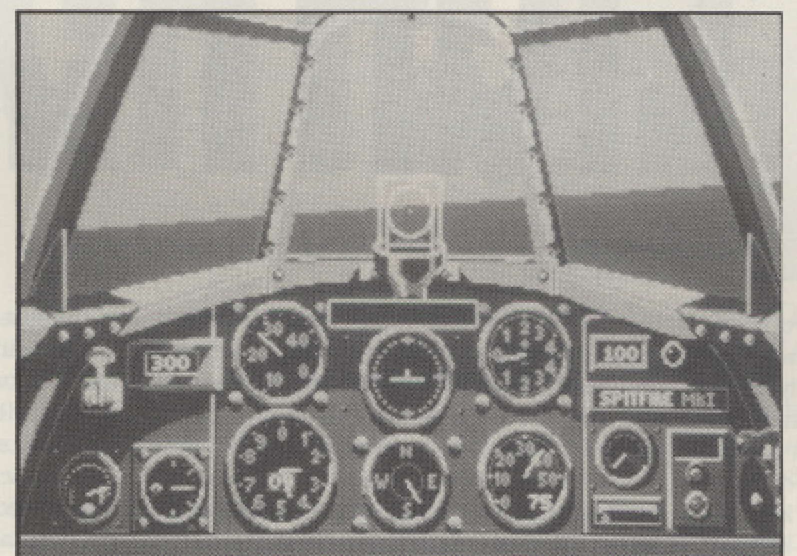
THEIR FINEST HOUR

Want to change the course of history? This new flight simulation from Lucasfilm gives you the chance to do exactly that! As you'd expect this involves rather more than simply flying a computer model of an aircraft. In common with most recent programs of this type it's a flight combat simulator, but this time the scenario is the Battle of Britain.

The package includes two double-sided disks (exchangeable for four single-sided disks if you need them); an ST specific reference booklet; an anti-piracy device thinly disguised as a "radio frequency cipher wheel"; and a superbly produced 192 page ringbound book. This book is crammed full of historical facts and photographs about the Battle itself and the aircraft taking part, as well as detailed program operating instructions. The program runs on a 512K machine, but additional graphics are available if you have more memory.

You start by learning to fly the aircraft - and there are eight different types to choose from! The Spitfire is joined by the Hurricane, Messerschmitt 109, Messerschmitt 110, Junkers 87 Stuka, Junkers 88, Heinkel 111, and Dornier 17. And what's more, you can take the part of the pilot, the air-gunner, or the bomb aimer - if the chosen aircraft has them, of course.

Once you've got the hang of things you can progress to combat flights. Here you chose an aircraft type and the program then presents you with a choice of eight historically based missions appropriate to the aircraft you've selected. These are arranged in increasing order of difficulty, so you just work your way up through them, with success rewarded by medals and promotions and tracked in the program's Combat Record.



DESIGNER MISSIONS

Before starting a mission you can also modify some of the mission parameters. This allows you to select the skill level of the opposing forces; start on the ground or in the air; give yourself unlimited fuel or ammunition; or fix things so you can't be damaged, shot down, or crash! And if you tire of the basic combat missions you can design your own using the supplied Mission Builder utility. This is quite a complex operation, but the manual covers its use comprehensively.

If you want to try something more than individual missions you can elect to fight a campaign, which turns the program into an action based wargame. You command either the British or the German side and fly a number of missions, starting on July 10 1940, the accepted start date of the Battle of Britain. You fly a mission every few days, and your success (or lack of it!) in fighting your own battles is reflected in the overall success or failure of your chosen side. Also, the effects of a mission are carried forward into subsequent ones, until your opponents can repair the damage you caused. The British side wins if it survives until 16 September - Hitler's deadline for launching the invasion of Britain. The German side wins if it destroys enough RAF aircraft before that date, and gains the air superiority needed for the invasion to proceed in relative safety. Yes, YOU can change the course of history - if you're an ace German pilot (or an inept British one!).

The cockpit graphics are generally quite good, with different layouts for each aircraft type. However, there are one or two odd looking instruments, such as the strange "bank indicator" included in place of an artificial horizon. The 3-D "through the windscreen" graphics are quite well done too, although I think they might be a little indistinct if viewed on a TV rather than a monitor.

SMOKE AND FLAMES

Animation of the battle sequences is well handled, particularly during a successful attack. You see tracer fire streaking towards the enemy, then bits flying off his aircraft in all directions if you hit it. If you're a hot shot his aircraft will stream smoke and flames and you may see him parachute out before it smashes into the ground.

Drop your guard and you'll soon find yourself under attack, and to help you keep a good lookout the program gives you plenty of viewing controls. You can look forwards, left, right, straight down, and backwards in the rear-view mirror (single-seaters only), plus a scan view option. The views are odd though, as you see them all through the FRONT of the cockpit! There's also a camera you can switch on to film the action for later viewing - but while viewing it you can change the camera's apparent vantage point. Clever cameras they had in 1940!

Overall, this is an excellent flight combat simulation, with enough action and strategy elements to keep you occupied for months. With its wealth of historical detail it could even claim to be educational too! The only criticisms I have concern the slightly sluggish aircraft control response, and the disappointingly inadequate sound. However these are minor niggles, and I rate the program as an essential buy for all flight and combat simulator fans!



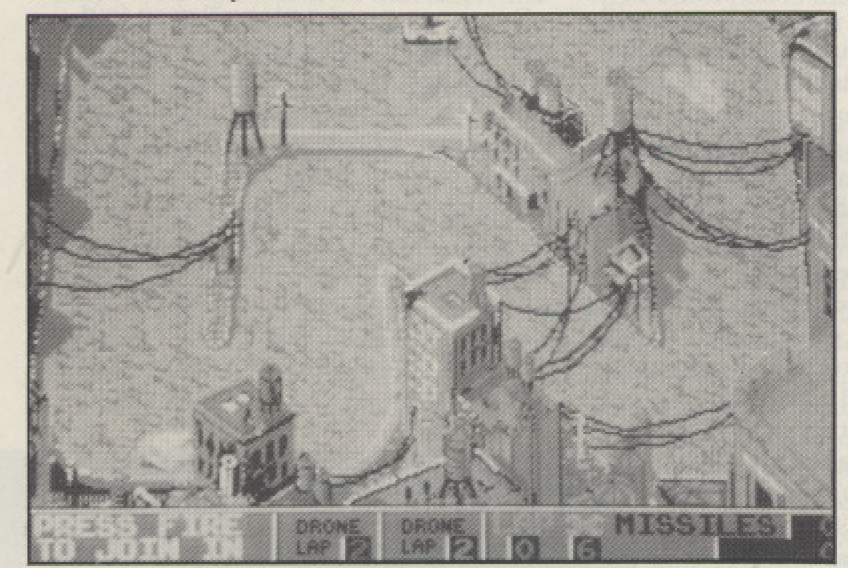
Title:	THEIR FINEST HOUR - THE BATTLE OF BRITAIN
Publisher:	Lucasfilm Games
Price:	£29.95
Reviewer:	John S Davison

DRIVING

RED LIGHT ... GREE

It would seem that as in the world of fashion there are distinct trends in software availability. Currently one of the largest trends seems to be motor cars and driving games. Here I am going to look at three pieces of software comprising seven games which would keep even the most avid driving fanatic at his or her keyboard.

Historically the compilation from Domark, **WHEELS OF FIRE** contains the roots of the other two games, Badlands and Nitro. "Wheels" has four famous arcade conversions within it's confines and they are listed as Turbo Outrun, Power Drift, Hard Drivin' and Chase H.Q. Sadly the disks I received had Power Drift on three of them thereby eliminating the famous Turbo Outrun, still three out of four ain't bad. At first glance Power drift and Psygnosis' **NITRO** seem related. Both have a choice of drivers in a series of races around different courses, both offer first hand driving views of the road. After that though the games begin to differ. Power Drift is an arcade clone of good quality that provides all the interest found in the slot machine and offers a running view of the players position in a race and plenty of variants on a theme. Nitro has all the superb front end graphic capability that the populace has come to expect from Psygnosis and does not present itself as an arcade transfer. Both games attempt to bring about the same end product, that of a season long race, although Power Drift does not allow for the progression that Nitro does. For example in Nitro's almost Death Race 2000 atmosphere there is a choice of vehicle for each race together with opportunities to further customise the vehicle whereas in Drift the car remains the same as the tracks become more tortuous in a muscle beach type of scenario.



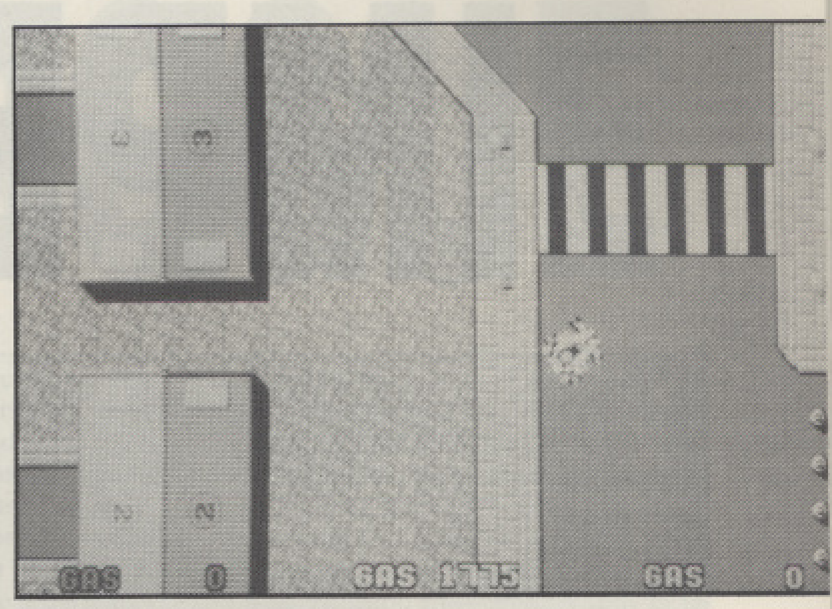
BADLANDS - a good conversion

I found **Power Drift** to be a simple rave from the grave that was escapist fun but I felt that Nitro with its similar joystick/keyboard control was a better development with far better scrolling attributes and a sense of tactical skill about it. The game even allows for the occasional pedestrian crushing as a bonus but at other times it is a distinct disadvantage. If you like your driving hard and tough with dirty tricks and darkness abounding then Nitro provides possibilities for the imaginative cyber-punk. The other obvious difference is that Nitro provides an overhead view of the action across city scenery thereby allowing the players, of which there can be up to three, to judge their road position and the bonus cash and petrol squares far more accurately whereas Power drift is an in cab perspective giving less awareness of other cars in relation to the driver.

The other offering in the first person driving stakes also resides on the Wheels disk, and for that matter on at least one other compilation going the rounds, that is the gut-churning **Hard Drivin'**. When I first reviewed this stunt driving simulation I was lavish with my praise and very little has happened to detract from my earlier feelings. The essence of this game is nothing other than skill at graduated levels, the game maintains good arcade converted graphics and scrolling and while not using the tactical season race of the earlier pair provides a very exciting race environment. That is players compete against themselves and find random oncoming drivers a hazard to avoid. This is still my favourite first person driving game. I still feel distinctly nervous during the loop the loop session and firmly believe that the game is the backbone of the compilation disk. No other driving game comes close to it's standards of manoeuvrability or addictiveness, and certainly nothing can compare to the self competition available in this. This game cannot be properly compared with any other and as such deserves a high place on most software libraries as a fairly unique game. **Chase H.Q.** on the other hand does not present such a wonderful feeling being a behind the car point of view similar to Outrun which entails some wild, against the clock, driving to enable the police to ram wrong doers cars. The game does not flow well and represents the poor side of arcade conversions. The graphics as usual are acceptable and the concept is fairly novel but, unfortunately, the gameplay is disappointing and this is one rave that could well have stayed in its grave. It is a shame this was included because the other two games and my memories of Outrun lead me to believe that Wheels would be a good collection without it.

The final Game in this bumper bundle is again from Domark and is a straight conversion of the current arcade game **BADLANDS**. This features two player action and some very interesting scenery. In many ways this is the game that Nitro tries to be but despite a great deal of show comes just short of. Badlands has the same overhead view of the cars and is very reminiscent of those early arcade

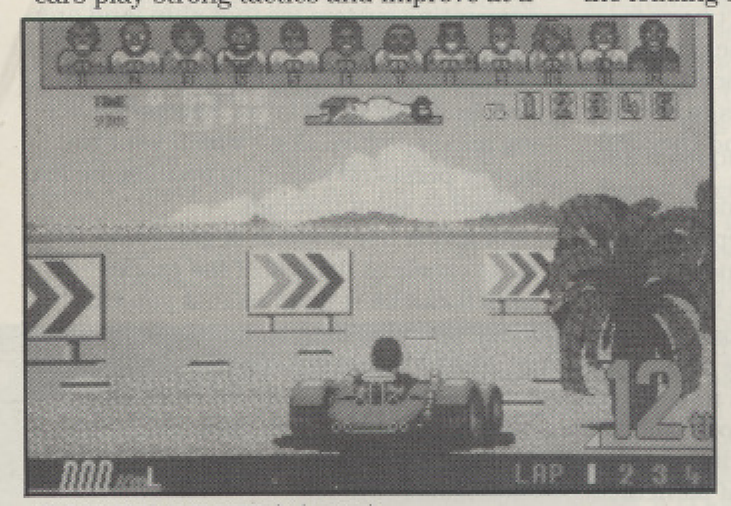
EEN LIGHT!



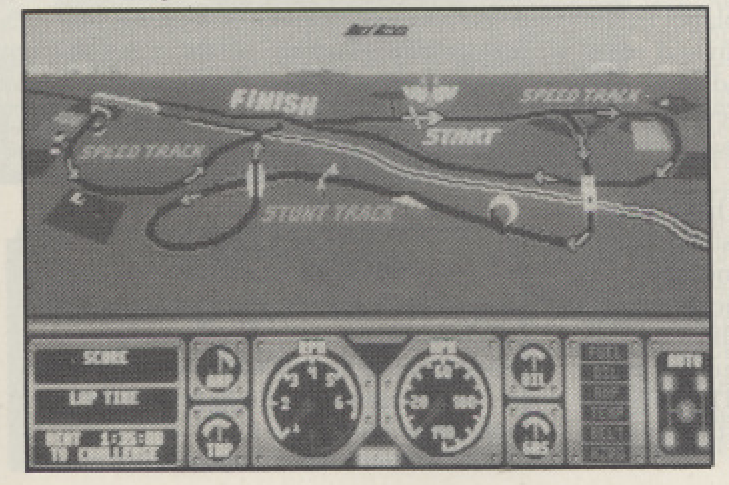
NITRO - Psygnosis's entry in the motor racing stakes

race games with tracks that changed each level and had little oil slicks and chicanes in them. Badlands offers two different forms of joystick control to accommodate various tastes. The are opportunities to customize your vehicle after each race. As in Nitro they include fuel, speed additives and destructive capabilities as well as defensive shields. In comparison to Nitro the screens are less attractive and far busier with the multiplicity of under and overpasses, but the overall standard of feature design gives Badlands a distinct edge in novelty and addictiveness. Badlands plays over eight different and varied circuits which include exploding volcanoes, army stores and high security prisons. The drone cars play strong tactics and improve at a legitimate rate. Unlike Nitro where running out of fuel disqualifies a racer, Badlands uses the Power Drift formula of needing to win the race to qualify for the next course. Two losses are permissible before the game over sets up. Various useful objects appear in the Badlands courses such as spanners to buy new accessories or missiles to remove unwanted obstructions such as other cars or scenery. There seems to be more point to the individualistic courses in Badlands than to the somewhat repetitive city scenes from Nitro.

In the sound effects department Nitro has far more interesting noises although Badlands runs more pleasant ditties during races. As with all Psygnosis games the loading screen music is strong and has a heavy metal touch that makes watching the load acceptable. It is with such touches that Psygnosis scores over its opponents although I still feel that this may be at the expense of protracted gameplay.



POWER DRIFT (above) and HARD DRIVIN' from Domark's Wheels of Fire Collection



In conclusion I think it is fair to comment that each of these games has something different to offer the prospective buyer. The compilation disk offers a good basic grounding in some almost classic car games. For its price it seems excellent value to the newcomer trying to create a library of different experiences for their hungry Ram chips. On the other hand if veteran players have several of the games the box becomes an expensive luxury and either type of player will find that some of the games in the compilation are slightly dated. Nitro provides a challenge for up to three players and may well provide a little nostalgia for those who enjoyed David Carradine's Death Race 2000. It will also appeal to sound and graphics buffs. The play is quite adequate even if a little lacking in control at times. Badlands provides an interesting challenge and an excellent example of the art of arcade conversion, if you enjoyed the arcade style then it is more than likely this will be to your taste.

If it came to a choice I would probably come down on the side of Badlands as my personal favourite of these various packages if only for the fun cartoonlike way portions of are presented, I could indeed be tempted to spend money on buying that particular game.

- ***GAMEPLAY*** *- In all of these was good but sadly only one of them gives mouse control as an option for driving*
- ***SOUND & GRAPHICS*** *- Each Domark game had good conversions from the arcade, the Psygnosis was as usual excellent.*
- ***VERDICT*** *- Each offers good value and playability, choice depends on user need!*

SOFTWARE REVIEWED

WHEELS OF FIRE
Domark - Price £29.99

NITRO
Psygnosis - Price £24.99

BADLANDS
Domark - Price £24.99

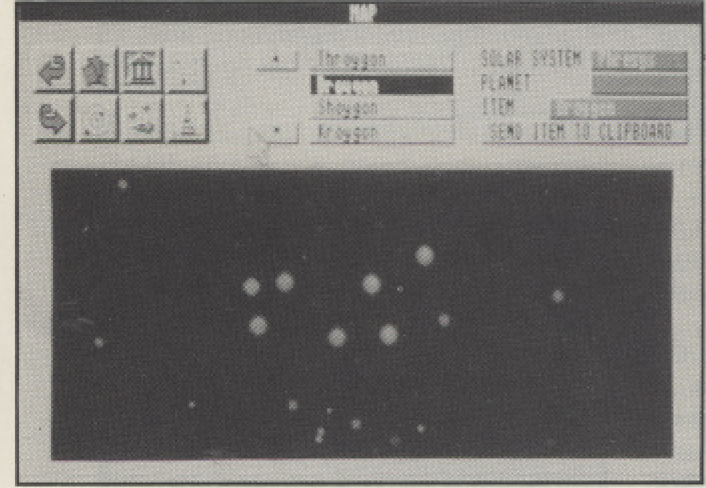
IMPERIUM

Imperium is the game I always wanted to write! It is of galactic scope, involving politics and conquest, trading and trade wars, planetary management and development, fleet development and ordering. It is just enormous.

You are the democratically elected leader of your empire. Your objective is to stay that way for a thousand years, or to conquer all the other computer directed empires first. To make it interesting you have a few challenges - you get old and die in a normal human lifetime unless supplied with copious quantities of "Nostrum", which is found on only a few planets, you must fight and win elections every fifty years, or sooner if you choose, your subordinates will rebel, enemy empires will strike at your home planet and natural calamities will disrupt your plans.

At the start of the game you have the planets of your home solar system, and subordinates to run these planets for you. Other subordinates must be appointed to be ambassadors to the other empires, and in due course to be fleet commanders. It is they who will negotiate trade deals, embargoes and military alliances at your direction. To motivate your people you can award them with military or civilian offices, pay them money and give them Nostrum (when you have found some!). Also you can improve your planets by spending money on them. To start with you have only two spacecraft and one of your first actions must be to build more - and to start designing improvements. These early craft will be used to explore the other solar systems in your galaxy, and to colonise any promising planets. In due course you will be able to build better ships, and then you can start planning invasions of the other empires.

This game sounds really great doesn't it?



Title:	**IMPERIUM**
Publisher:	**Electronic Arts**
Price:	**£24.99**
Reviewer:	**Mark Evans**

GAMEPLAY

To expect anyone to handle a game as complex as this when they first boot it up would be stupid. However the game is well equipped to help the novice emperor develop his skills so you won't have to learn it all at once. You can select the standard of play of your opponents, and you can appoint subordinates to run key parts of your own empire - and they will do so fairly competently.

Unfortunately, the implementation does not live up to the game concept. Play is achieved by manipulating windowed lists of people, planets, fleets etc. That wouldn't be too bad if done well but it isn't. For example, one of the most frequent actions I found myself doing was going one by one through a list of my planets specifying troop developments. The list of planets was quite long (about 7 screens) - and every time I specified a troop development the planet window was closed, so for the next planet in the list I had to open it again and scroll and scroll and scroll and scroll and ... yawn. Doing this for every planet for every year of a thousand years is extremely tedious.

The developers of the game have designed their own windowing system. This has several nice usability concepts - however, my guess is that the developers were being pushed by a deadline and so did not have time to check out the user-friendliness of their design. The difficulty described above is typical of the type of problem they have overlooked.

There is an interesting feature of the game (not intended by the developers) in that if a large number of troops are garrisoned on a planet, then that planet's population is set equal to the number of troops. Also when carrying 64K (65536) troops of a given class on one ship, adding one more resets the total to zero, which throws out the whole population accounting system for that ship (and any planet it is on).

In summary, playing the game after the first hundred years or so, becomes a boring and repetitive slog - which your reviewer persisted with only because he felt obliged to see it through.

Not much use is made of graphics - one quite excellent display of the galaxy (which can be rotated so that you can focus in on the area of space you are interested in) is the only use of either colour or of graphics in the whole game. (Yes, those boring lists are in grey and black and white only!). Not much to get excited about here.

There are a few nice musical effects used to introduce the various reports you receive each game year. My review copy of the game crashed after a time if this feature was activated! So if you must, leave sound effects on for a year or so - but then disable them. Otherwise, make sure you make frequent saves. There is no other use made of sound in the game.

VERDICT

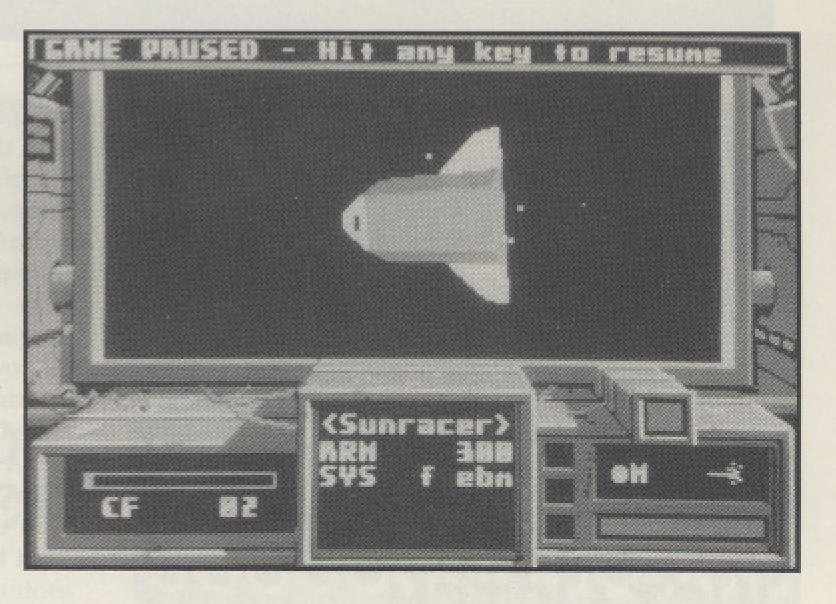
Imperium is a great game concept, very poorly implemented. Unless you are heavily into grey and white, poorly designed lists with no sound to relieve the monotony - don't buy it.-

SPACE ROGUE

"Dropping out of hyperspace, you lay a course for the Lagrange Station. Suddenly the klaxon screams out a warning, two Darts and a Corsair are heading right towards you. Pirates! You roll hard to avoid the incoming enemy fire, one of their shots hits and takes out your rear shield. Spinning to protect your stern you launch a heat seeking missile, it seeks out the Corsair and destroys it totally, vapourising it into space dust. Stunned the remaining pirates flee for deep space". Thus begins your life as a space pilot in Space Rogue - a good start, apparently you have just seriously annoyed some of the most notorious pirates in the whole universe! But never mind, they'll soon get over it (you hope).

In Space Rogue you can become an interstellar trader, pirate or bounty hunter. You pilot a highly advanced scout ship which you take from star system to star system buying and selling cargo and fighting off the enemy pirate ships. As you play (it boasts on the packaging) you become entangled in a web of interstellar intrigue.

On superficial inspection Space Rogue appears to be yet another variant on the theme of games initiated by Elite all those years ago. As the game manual says - "Space Rogue is not just a space-flight combat simulator, it's a role playing game". As you take on your 'role' as a space pilot you do other things besides just piloting your ship. In order to generate the funds to keep your ship in working order you must develop a career for yourself to generate income. On your travels you will meet many different people and talking to them can lead you to performing missions which could be very lucrative for you. Alternatively, the various folk dwelling in the outposts of civilization may just have some information which you need.



Just as in games such as Elite, everything you do will have an effect on future events. In effect, you develop a reputation which you carry with you, something which most of the games characters will have heard of. So, for example, if you encounter a conflict between a pirate and simple trader while patrolling the star system, whoever you opt to 'side' with will have a direct influence on your reputation. This in turn will effect the way in which people react to you in the future.

Space Rogue is a vast game which incorporates many different types of gameplay. Firstly there is the 'Elite' type space conflict sequences with their smooth three dimensional graphics. Along with this there is the exploration of star bases and mining installations which take on the simpler form seen in other Origin products such as the Ultima series of role playing games. It is within these parts that you have the opportunity to communicate and interact with other characters. Also in these sections you have the opportunity to play 'Hive', an arcade game you'll find dotted throughout the galaxy. Dubbed as the the "most popular game in the universe", it adds a pleasant and different 'twist' into a game which is full of surprises.

"ALERT! ALERT! screams a voice in your helmet mike. You rush to the cockpit to see the PRINCESS BLUE. She's under attack... by Manchi Vulture-class hiveships! "Evac, evac!" the helmsman shouts. "Scramble, scra-"

And the battle is over. Before you can blink, the Manchi plasma torps strike the PRINCESS's unshielded thrusters. The helpless merchant explodes in a flare of radiation.

In terms of presentation, my view of the game varies. In some sections the graphics are of a very high quality. The most notable 'section' being the space combat sequences, which is really slickly done. The animation is smooth and the response of the game to fast joystick action is more than satisfactory. On the other hand the more 'interactive' sections of the game, where you find yourself exploring the various space stations and complexes, are very simple in appearance. Despite this, I do not believe that presentation is intended to be a selling point of Space Rogue. The market obviously aimed at is the 'role playing' genre of computer games - a sort of Dungeons and Dragons in space. It's obvious that the depth of gameplay is by far the most important factor in a game of this type. I don't know how many of you can remember an old 8-bit game from around five years ago called 'Omnitrend's Universe', but those who do will know what to expect from Space Rogue. It's an open ended, colossal, interactive 'life simulation' where everything is dependant upon your actions.

In terms of gameplay, Space Rogue is a very time consuming game needing the investment of a great deal of time to make it fully worthwhile. When you begin the game you have absolutely no objectives or goals, apart from earning some money to survive. All your goals must be set by you. Any work done must first be found, and your reputation can only be built by your actions.

- ***SIGHT AND SOUND*** *- the presentation varies from good to bad, but overall it's more than adequate for a game of this type*
- ***GAMEPLAY*** *- very much a game you have to 'get into'*
- ***OVERALL*** *- if you like role playing games you'll love this*

Title:	**SPACE ROGUE**
Publisher:	**Origin**
Price:	**£24.99**
Reviewer:	**John Davison jnr**

PD WORLD
Paul Rixon's

THE WONDERFUL WORLD OF MUSIC ... CREATE IT, PLAY IT OR JUST LISTEN TO IT

When Atari first announced the arrival of the XE and ST ranges, at the Las Vegas Computer Entertainment Show in January 1985, they stole the computing headlines with details of an exciting new machine designed especially for the budding musician. The 8-bit 65XEM was reportedly based on Atari's revolutionary (but as then, unfinished) AMIE sound chip and 'capable of emulating speech and singing with unprecedented accuracy'. Alas, in common with so many of Atari's most potentially breath-taking projects, the prototype XEM (along with a portable XE, 130ST and several other peripherals) was never made publicly available. All hopes turned to the ST computers which were certain to appear in one form or another and, as Jack Tramiel promised, would offer previously unthinkable 'power without the price'.

The ST arrived in Britain 'for real' to an enthusiastic reception. Those who had called for a computer aimed at the business market were impressed with the machine's large memory and 'Mac-alike' GEM environment. Games players could look forward to the prospect of some amazing graphics, programmers couldn't wait to start tinkering with the all-powerful 68000 microprocessor and serious musicians could now buy a complete MIDI-compatible micro for the smallest outlay ever. Perhaps the only disappointed audience were those who had urged Atari to equip the ST with a decent inbuilt sound source - instead the machine's Yamaha YM2149F sound chip offered little better performance than its 8-bit predecessors.

Fortunately Atari enthusiasts are a resourceful lot and, over the years, have succeeded in creating music and sound on the ST that most would not have thought possible. A wander through the ever-expanding PAGE 6 ST library has convinced me that the ST's sound chip really can't be that bad after all!



SYNTH SAMPLES - excellent Midi tunes

MUSIC STUDIO

Activision's Music Studio is a relatively cheap and consequently popular composition tool that can be used to create tunes for play-back through a MIDI instrument or the ST's internal sound chip. If you're musically minded it's possible to produce some excellent results but if you can't tell D Minor from a Morris Minor then a small amount of assistance could be needed! In the Public Domain there are dozens of ready-made tunes and the great advantage is that you don't need MIDI hardware or even the Music Studio software to play them. On **MUSIC STUDIO SONGS 1** you will find around forty titles including Chariots of Fire, classical pieces from Holst and Bach plus a collection of tunes from the 'Children's Corner'. There's also a conversion utility that will take Music Studio files from the Amiga and transform them into ST format.

If you don't have Music Studio you will need a program to play the songs - a good one is The Record Player on a disk named, appropriately, **MUSIC STUDIO PLAYERS**. The Record Player will let you place any number of song files into an 'album' which it subsequently loads and plays in the specified order. Control-key options enable you to interrupt the sequence to jump songs or stop altogether if you need to, and albums can be saved for future use. The disk contains several other players for MIDI users (see John Davison's column for the latest MIDI info!) and another collection of great tunes such as 76 Trombones, La Bamba and Bridge over Troubled Water. As if that's not enough to keep your ear drums occupied there are FIVE other song disks in the library! Unlike the first compilation there is a player on each disk so you can listen to the tunes straight away. **MUSIC STUDIO SONGS 2** also offers a neat utility for porting AMS files from the 8-bit Atari to Music Studio on the ST. All you need is Tari-Talk from PAGE 6 (plus an 8-bit Atari, of course!) to transfer all those great tunes from the 8-bit PD disks. At a rough estimate there are almost four hundred songs on the seven disks I've mentioned above (and there are hundreds of AMS files in the 8-bit library) - so whatever your musical taste, there has got to be something here of interest!

MUSIC CONSTRUCTION SET SONGS

Similar in nature but different in style are those songs produced using the Music Construction Set. **MUSIC CONSTRUCTION SET SONGS 1** is a collection of 35 tunes which can again be played through MIDI or your monitor. A menu-based player is supplied on the disk so there's no need to own the commercial application. Some of the best tunes include Axel F, Flight of the Bumble Bee and Michelle (ma Belle). Another good song collection is **MUSIC 1**, this

time presented as accompaniment to a continuous slide show. The follow up, **MUSIC 2 - SYNTH SAMPLES** features many more tunes and loads of pictures in the same format and as if that wasn't enough, **MUSIC 3 - SYNTH SAMPLES II** has over thirty more! These disks demonstrate quite clearly that with the right touch the ST's humble sound chip - coupled with some nice artwork - is capable of generating excellent entertainment!

The player on MUSIC STUDIO PLAYERS that enables you to create your own albums and play them through the monitor or a Midi synth

DIGITISED MUSIC

Digitised music demos are always impressive but they often demand large amounts of memory (for example, **S'EXPRESS** is a superb continuous sample requiring one megabyte) and are relatively simple to produce, if you've access to the necessary hardware. To stand out from the crowd, the demos have to be REALLY good! Some that fall into this more exclusive category are **MEGABANG**, **THE PRISONER** (a great soundtrack from the weird sixties' series!) and **PUMP UP THE VOLUME**. My personal favourite is the sampled music section of the **THALION SOUND DEMO** which features an amazing version of 'Axel F' as well as three other brilliant tunes. Elsewhere there is soundchip music galore from well-known computer games and some stunning graphics. Get this disk if you want to show people how good the ST really is!

STEREO SOUND

Atari's answer to criticisms of the ST's internal Yamaha sound chip is the 8-bit stereo pulse code modulation system fitted to the STE. If you have an STE and a stereo monitor (Philips have recently introduced an updated version of the CM8833 so it's likely that remaining stocks of the old model will be available more cheaply) or a conveniently situated Hi-Fi with phono inputs you can now experience CD-quality stereo music. At least, you can if you have the all-important software that's needed to drive it! At present there are only a handful of demos across the various PD libraries and a few commercial programs boasting STE support. The **ATARI STE DEMO** has some reasonable graphics and a fairly short burst of excellent stereo music but hopefully there will be more to offer soon when Atari begin to phase out the older machines. Incidentally, problems with the initial supply of STE's - ranging from TOS bugs to serious difficulties with the DMA port - should almost certainly be eradicated with the latest batches. There are now plans for a Mega-STE and a new 'standard' TOS providing many of the features of Neodesk, so the STE's future looks promising. Unfortunately, mine is presently away for recuperation after a severe bout of powerfailureitus (perhaps it caught something off Peter Hickman's!) - if only everything in life was as reliable as an 800XL!



MEGABANG - one of the first well mixed digital samples with good graphics

SOUND TRACKER

One application that does have an option to make use of the STE's stereo sound is 'Carebear' Anders Nilsson's TCB Soundtracker, which made its debut at last year's CES at Earls Court. The Soundtracker can turn your ST into a four channel music synthesiser, drum machine and mixing studio without any special hardware and works by playing digitally sampled sounds which you can either create using Microdeal's Replay Cartridge (not supplied!) or obtain ready-made on disk from the publishers, MPH. A review of the commercial product appeared in the last issue of NEW ATARI USER but if you still haven't decided whether or not to shell out forty pounds, the **TCB SOUNDTRACKER** demo disk must be an essential acquisition! The demo is an early development version and is missing some of the features (such as MIDI and stereo modes) of the final release - but it's still surprisingly functional. Unlike copies which have found their way onto the cover disks of certain ST magazines, the disk in the PAGE 6 library is packed to the last sector with samples, songs and ready-built modules. There are also separate versions for half and one megabyte machines (it will run on the 1040STE but apparently not the 520). You can treat the Soundtracker as a brilliant sampled music demo using the modules supplied or you can load in the samples and use the ST's keyboard to compose and record your own music. Either way, it's a whole load of fun!

SIGNING OFF

Anyway, that lot should keep you occupied for a while! Don't forget to check the box below if you want to obtain any of the disks I've mentioned in this article. Next issue's topic has yet to be decided so if you would like to see something in particular, all you have to do is write and let me know ....

HOW TO GET THEM

All of the disks featured in PD World are available from the PAGE 6 ST library. Each has a unique reference code which you should use when ordering or making enquiries. Please contact PAGE 6 if you don't have a copy of their Accessory Shop leaflets and check the system requirements for each disk. THE PAGE 6 CATALOG DISK containing a full list of disk names and contents is available from the library, priced at £1. The disks referred to in this article are:

ST6 - MUSIC 1	ST156 - MEGABANG
ST53 - MUSIC 2 SYNTH SAMPLES	ST165 - MUSIC STUDIO PLAYERS
ST74 - MUSIC 3 SYNTH SAMPLES III	ST211 - MUSIC STUDIO SONGS 5
ST84 - MUSIC STUDIO SONGS 1	ST217 - MUSIC STUDIO SONGS 6
ST108 - MUSIC STUDIO SONGS 2	ST249 - ATARI STE DEMO
ST121 - MUSIC STUDIO SONGS 3	ST256 - THE PRISONER
ST122 - MUSIC STUDIO SONGS 4	ST337 - TCB SOUNDTRACKER
ST138 - PUMP UP THE VOLUME	ST343 - THALION SOUND DEMO
ST154 - MUSIC CONSTRUCTION SET SONGS 1	STS36 - S'EXPRESS

Prices for standard disks are £2.95 each or £2.50 each for ten or more. Write to PAGE 6, P.O. Box 54, Stafford, ST16 1DR Telephone 0785 213928 or FAX 0785 54355 with credit card orders.

NIGHTBREED

THE INTERACTIVE MOVIE



This game from Ocean Software is based upon the recent film of the same name, which in turn was an adaptation of Clive Barker's excellent horror story 'Cabal'. The game is very different from other film based games in two major respects. Firstly, it is not simply a ladders and platforms game which happens to have the films characters in it. Secondly, it is actually very good!

You will notice that the game's title is 'Nightbreed - The Interactive Movie', and it is the way in which the game represents the story which is quite original. In terms of style the game is very similar to such classics as 'Defender of the Crown' in that you take part in an ongoing story which is represented graphically throughout. However, in this case the 'story' is the story of the film. The game begins as the film itself begins, with the hero, Aaron Boone, being told of a series of brutal murders by his analyst, Doctor Decker. These murders were allegedly committed by our hero and he is advised to turn himself in to the police. From here on all of the major events of the story are covered, from Boone's encounters with the evil 'Mask', to his acceptance into the 'Nightbreed'. This is an unholy gathering of misfits not fit for heaven or hell, who thrive in their own community away from humanity

Your aim is to control the events of the story by simple interaction. Control is mainly by mouse and you can 'click' on various choices throughout the game. At intervals there are opportunities to enter into a more 'action' oriented environment were you have a more 'hands on' type control of events. Such instances are your encounter with the knife throwing evil 'Mask', and when you enter the labyrinth of Midian, the underground domain of the Nightbreed.

In terms of presentation, the game is superb. The pictures are well drawn and recognizably based on the film. Equally, the sound consists of some superb sampled sound effects and music - very impressive.

Overall, Nightbreed is first rate, however, it does come on three disks, and if you do not have two drives, the process of disk swapping is a pain and can slow the game down enormously.

FACTS

Title:	**NIGHTBREED**
Publisher:	**Ocean**
Price:	**£24.99**
Reviewer:	**John Davison jnr**

SIGHT & SOUND

The graphics are fantastic - well drawn, moody, and recognizable from the film. The sound is also of a very high standard

GAMEPLAY

I thoroughly enjoyed playing it. It is easy to control and satisfyingly varied. On a single drive system gameplay is spoilt by disk swapping, though

VERDICT

I am a big fan of both the book and film and was pleasantly surprised by the quality of this game. It follows the film well and is suitably original in style.

SKYSTRIKE +

FACTS

Title:	**SKYSTRIKE +**
Publisher:	**Atlantic**
Price:	**£6.99p**
Reviewer:	**Damon Howarth**

SIGHT & SOUND

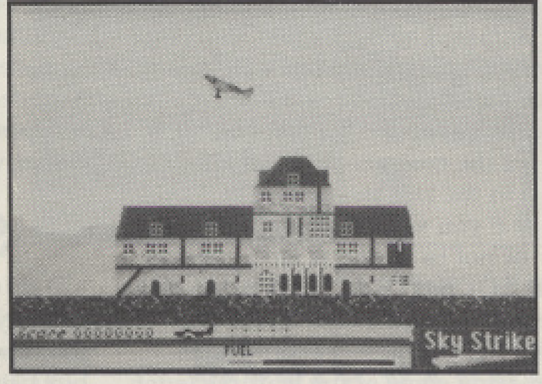
Addictively simple, smooth flowing and highly entertaining

GAMEPLAY

Newly sampled sounds add extra dimensions here, the graphics are also very strong

VERDICT

Excellent, if you enjoyed the original go out and buy this yesterday



The 1940s return. This package will be familiar to all members of the STOS Users Club since it was written by their leader Aaron Fothergill and is the improved update to the Skystrike game found on Games Galore. Fondly remembering the prototype I waxed my handlebar moustache, put on the Biggles scarf and goggles and took a spin in this newly improved Spitfire XIV.

For those who played the original there is no change in either the control mechanism nor the humour. What they will find to their pleasant surprise is that the sounds are now sampled with far better effect and that the scrolling feels better.

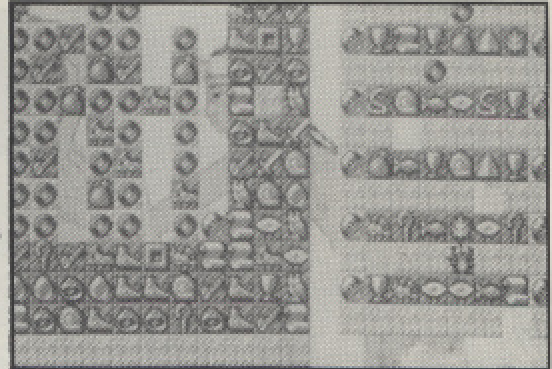
As a fan of the original I was most pleased to see that many enhancements have been made to this version. There are many more screens and missions to take part in and the bad guys seem somewhat smarter and a lot more deadly. For some reason the fuei seemed to burn away faster, obviously this new model does not have the 'green' pretensions of earlier models. Mr. Fothergill's sense of humour shows through both in the instructions on and off the disk as well as the new bonuses that appear in the form of spacecraft that gives useful additions to high flyers and of course in the shape of dead enemy planes.

The graphics are still as good as they ever were but now there are more backgrounds. Carriers are now to be found within the games confines, it is perhaps not wise of me to unfurl to many more secrets of this game since there are so many surprises it is rather like reading an Agatha Christie tome.

The packaging even has a New Atari User quote on the back by my colleague Peter Hickman which actually relates to the original but applies to this souped up version even more so. My feelings would be that it is now not just "infuriatingly addictive" but that it gives an almost unstoppable urge to play and is a conglomerate of fast action and good humour rarely found in an arcade game at this price level.

I do not hesitate in suggesting you get out there and buy it now.

THE CURSE OF RA



You have been turned into a beetle because you didn't make enough sacrifices to Ra. Scattered across the screen are numerous small tiles marked with Egyptian symbols; some are fixed, some you can ride on with your joystick-controlled beetle. If two similar tiles are in line you can destroy them by pressing the button - clear all the tiles and you get the password to the next level. Extra features complicate matters: Ice tiles; Teleporters; crumbling Traps (these must all be destroyed); Movers which glide across the screen when unblocked; and Targets - only destroyed by Movers.

The Curse of Ra is two games in one. The Logic Game consists of 100 levels where your main challenges are: finding the moveable tiles; making sure you don't strand yourself or get blocked by the Movers; and getting back to the starting tile to complete the level.

Once you have mastered the concepts you can have a go at the Arcade Game. Now you have all the problems of the Logic Game PLUS limited time, limited number of lives, and the ability to walk off the edge of a tile and die in the void. Fortunately you can grab coins which fly across the screen and using them in the end-of-level shop to buy goodies like: 30 seconds flight, a minutes extra time and remove a pair of tiles which are not in line. You can also Save your position at certain stages. You have to survive ten levels (randomly chosen from another 75) to win. On top of all that you get an Editor so that you can design another thirty levels of your own as well!

I enjoyed the Logic Game, although I did find most levels to be relatively easy once you have mastered the basic concepts and it got a bit repetitive - I think it needs a few more variations or clever ways of using the existing features to make it as good as Bombuzal or Tower of Babel. I also found the choice of colours to be very poor - all the symbols are yellow (including Ice, Traps and Targets) so that it is quite hard to see what is going on.

The Arcade Game is an interesting challenge but I found it very frustrating that you could die so easily just by the slightest move of the joystick off the edge of a tile or by the slightest hesitation.

FACTS

Title: **THE CURSE OF RA**
Publisher: **Rainbow Arts/ Softgold**
Price: **£24.99**
Reviewer: **John Sweeney**

SIGHT & SOUND

Good graphics - spoiled by a lousy choice of colours - nice fanfare whenever you finish a level

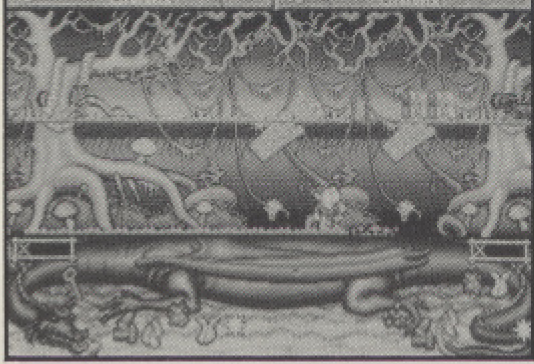
GAMEPLAY

Some excellent puzzle levels and a very challenging arcade game

VERDICT

Logic, Arcade and Editor make it good value for money if you like the concept - not everyone's cup of tea

SPELLBOUND



FACTS

Title: **SPELLBOUND**
Publisher: **Psyclapse/ Psygnosis**
Price: **£19.99**
Reviewer: **John Davison jnr**

SIGHT & SOUND

The graphics are intricately detailed and colourful, although they are not typical of Psygnosis' style. The sound is fairly poor by comparison

GAMEPLAY

Very good as a two player game, but a touch on the dull side for a single player

VERDICT

Not their best release, but far from bad

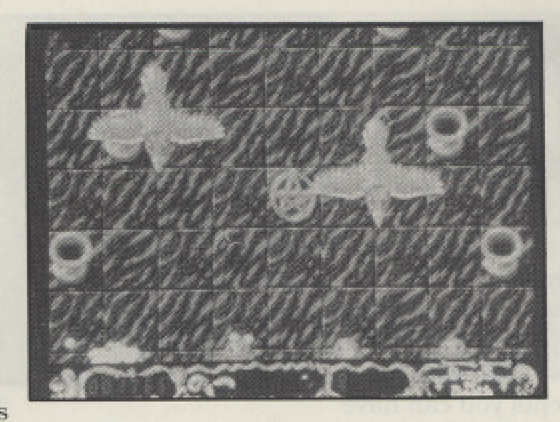
Just as you are about to advance a grade in the school of magic, your tutor manages to go and get himself kidnapped! Your task is to rescue him or else you will never be able to graduate. To reach him you must journey through eight different, dangerous lands, each containing many hazards. On your journey you must collect objects and spells which will help you in your dilemma. Along the way you will encounter a vast number of unfriendly adversaries and you have no choice but to use your limited magical powers to try and fight them off.

I have for a number of years now been a big fan of Psygnosis/ Psyclapse software due to its exceptional quality. The games have always been well presented and superbly produced and Spellbound is no exception to this. The packaging is, as ever, of the highest quality - you actually get an instruction book, something which not many software companies bother with. The game itself is, however, not up to the usual standard in my opinion. The concept, for a start, is far from original. The game is basically a multi screen arcade adventure where you guide your little character around a series of platforms searching for various artifacts. It's not exactly a new idea is it? The only saving grace in terms of originality is that you can actually play a two player game where a pair of you can do battle with the hordes of hell.

Graphically the game is very bright and colourful but definitely a very different style from previous Psygnosis releases. In the past we have been presented with large, bold, and beautifully shaded sprites which became almost a trademark of the company. The characters in Spellbound, however, are small and finely detailed They are still very good, but they somehow do not look as professional as in games such as Barbarian or Blood Money. The backdrops though are really excellent. They are colourful and a great deal of attention has been paid to detail. The sound on the other hand is no great shakes, just about adequate.

The two player option is the best feature and adds considerably to the game's attraction.

WINGS OF DEATH



I picked up my joystick and girded my loins for a mighty shoot em up of the proportions only fantasy can offer. The opening music and loading screens kept my appetite high. A German firm I had not come across before and all the best loading features - this could be good!

As the drive chugged I read the background that I was Sagyr the Sorcerer transmuted to a bat by evil Xandrillia (why do all villains seem to begin with an X I idly wondered). It is my quest to regain my lost shape by flying along and zapping her minions intent on bat butties for tea.

At last the game was loaded, the screen was very colourful with excellent art work, I was ready to begin. Joystick cunningly turned to Auto fire since the instructions point out this game is for shooting everything that does or does not move. Off I sped. My early success was marvellous as I found bonus disks that gave me flame breath at high power, the speed and smoothness had me enthralled, then just as I was settling into all this mayhem the game stopped. I surmised it had crashed, I cursed the cat and tried again. This kept happening, the cat had left its accustomed position atop the monitor and I turned off the Autofire.

The game did not crash, I managed to limp past the crash point but without the resourceful button I did not proceed past the second level. This is a difficult and fast Shoot-em up and I loved it.

The feel is of a fantasy Xenon with all the bonus buttons to store, there would even appear to be small problems to solve in flight. The game has everything except autofire compatibility. Secretly this pleases me since I have seen too many of these good games ruined by continuous blasting. Sadly my new joystick has consigned itself to yet another pile of molten plastic from over use and my thumb is undergoing long term rest from button pushing.

I can thoroughly recommend this game to any shoot 'em up lover as a strong test of their devotion to the art. Remember to keep your autofire off and pleasure will be yours, get out there and pester your supplier to get this for you. I loved it.

FACTS

Title: WINGS OF DEATH
Publisher: Thalion GmbH
Price: £24.99
Reviewer: Damon Howarth

SIGHT & SOUND

Loud and artistically strong, good f/x and well made smooth sprites

GAMEPLAY

Fast, furious, entertaining, explosive and a little problematic

VERDICT

One of the years best shoot em ups, treat yourself to this

PLOTTING

FACTS

Title: PLOTTING
Publisher: Ocean
Price: £19.99
Reviewer: John Davison jnr

SIGHT & SOUND

The graphics are very good, with sprites and backdrops being nicely drawn. The sound is not so hot, merely adequate

GAMEPLAY

This is a very addictive game which involves both a bit of fun and a bit of concentration

VERDICT

A great release from Ocean. Highly commendable

And now for something which is certainly a bit different. The object of this fairly simplistic game is to reduce the number of blocks on the screen to less than a pre-defined target number within a preset time limit. This target number begins at nine and changes as you progress through the levels. The blocks can be eliminated by hitting them with the same type of block, either from in front or from above. When you manage to eliminate a block, the next block in the same direction will be thrown out. If you hit a line of the same type of block, the line will be eliminated.

There are four basic types of block - green, red, black, and blue, and they are laid out on the screen in a predetermined pattern for each level.

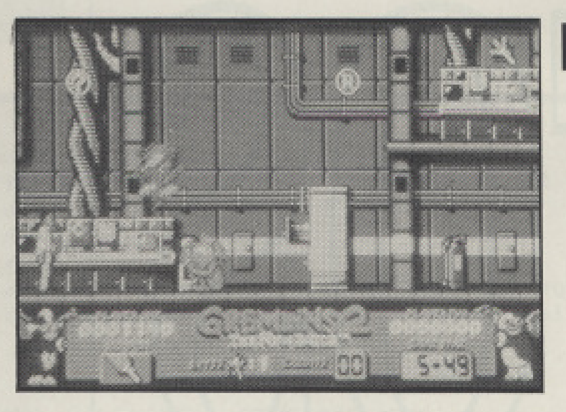
In many ways it is possible to find many similarities between Plotting and the ancient classic Pengy. Both games involve the movement of blocks and are equally as enjoyable. Plotting however does involve some degree of complexity as, after the first couple of levels, the process of knocking out the blocks becomes more and more of a challenge. You control your little 'blob' shaped character up and down the left hand side of the screen and you can throw the blocks across the screen however, in some instances, you will need to throw them in such a way that you hit other blocks from above. You do this by bouncing them off angled parts of the backdrop, thus causing them to change direction.

The playing screen is split into two halves, enabling you to play a simultaneous two player game where you can race each other through the various levels. Not only this, but there is also a construction kit, where you can build and save your own levels.

The graphics are very good indeed. They are colourful, and detailed in appearance. The 'blobs' which you control are amusingly animated and the backdrops are beautifully drawn, giving each level a unique scene. The sound is of mediocre quality but is quite adequate for the game and does not spoil the fun at all.

Plotting is an excellent game which is both enjoyable and addictive. No shooting baddies, no ideas pinched from films, just old fashioned fun.

GREMLINS 2



Most of you will have seen the film, as it was a major success countrywide earlier this year, however, for those of you who don't know what it is all about, here is a brief resume.

The new scene is set a number of years after the original Gremlins' night of carnage. The cute and cuddly Gizmo is now back with his original master. However a number of incidents find both Gizmo and the hero of the story, Billy, in the vast building complex of the 'Clamp Plaza'. Here due to a number of accidental occurrences the Gremlin problem begins again, however this time new terrors abound due to the Gremlins discovery of a science lab within the complex. In these labs they intoxicate themselves with strange experimental liquids which change both their form and their level of intellect.

Your task, as Billy, is to journey through the vast Clamp Plaza combating the savage hordes of Gremlins, in search of various parts which are necessary to destroy the little green guys. Occasionally you will find assistance in the form of the Rambo inspired Gizmo as he roams around knocking out the occasional Gremlin. However you are mostly alone in your task, thus you welcome any weapons you can find. This startling armoury ranges from genetically modified tomatoes to torches which 'fire' three enormous beams of light.

Basically the game is little more than a multi screen arcade adventure type game where you walk around in search of bits to help your quest. Every now and then you will have the opportunity to purchase a weapon from a shop which then becomes your 'default weapon'.

The graphics vary considerably in quality. There are a number of single pictures which are truly incredible, of particular note is a picture of Gizmo after the game has loaded which is superb, however the game screens themselves are quite primitive in appearance, most of the graphics being blocks of colour which are far from inspired. The sound effects are superb due to the quality of the samples used, and it is these which give the game a certain degree of humour.

Overall Gremlins 2 isn't bad, but it is far from original.

FACTS

Title: **GREMLINS 2**
Publisher: **Elite**
Price: **£19.99**
Reviewer: **John Davison jnr**

SIGHT & SOUND

The sound effects are very good indeed, however the graphics only match this quality on a couple of still frame pictures

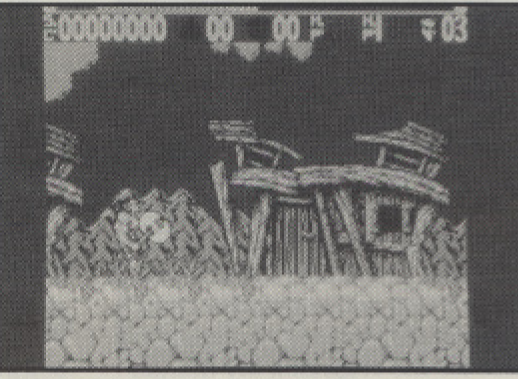
GAMEPLAY

It is very much like several thousand other games on the market - a bit tedious, but not to the point of frustration

VERDICT

Just another average film spin off

TORVAK THE WARRIOR



FACTS

Title: **TORVAK THE WARRIOR**
Publisher: **Core Design**
Price: **£24.99**
Reviewer: **John Sweeney**

SIGHT & SOUND

Reasonable music which wouldn't turn off on my copy so the sound effects were a little muted

GAMEPLAY

Challenging Bash-em-up with plenty of variety and features

VERDICT

Well worth buying if you want another high quality Hack-'n'Slash to add to your collection!

Another Joystick-Driven Horizontally-Scrolling Barbarian Beat-em-up - the evil Necromancer has cast his shadow over the land, and armed only with your trusty double-headed axe you must set off from your ruined village through swamps, mountains and jungles to reach his castle and face off against the evil one.

Along the way you can find better weapons - Broadsword, Warhammer and Morning Star - plus Power Ups to make them do more damage - all of which you will need to destroy the countless hordes of Killer Wasps, Rockmen, Zombies, Scorpions, Barbarians, Winged Dragon Bats, etc. which will try to stop you from fulfilling your quest. You can also find various Energy Orbs to restore your ailing health, Speed Ups to improve your combat reactions, Extends to increase your maximum 'hit points', Armour (temporary) and Magic Potions which give you a few high power blasts from your weapon. The Magic Potions are especially useful against the end of level monsters - Stag, Insectoid, Gryphon, Dragon, Serpent and, of course, the Necromancer himself! The action and monsters are well animated against a smoothly scrolling background and the game has a very good 'console' feel to it.

Each of the five levels is broken down into a number of sections so that if you die you don't have to start the level again - as long as you have a life left! - but there is no facility for saving your game position or for restarting anywhere other than the beginning of level one.

Initially you will probably find it difficult to avoid getting hit by the enemy in between the multiple blows you need to make to kill them, but you will soon learn how to leap back after each blow so that you can remain unscathed while reducing the enemy to lifeless blobs! Although most of the action is Horizontally-Scrolling, there are numerous detours down wells or pits and back up via lifts so that the game offers more than the average beat-em-up.

If you don't mind starting again every time you lose a life then you should get many happy hours of mayhem out of Torvak the Warrior.

PeterHickman's STOS COLUMN

In which Peter Hickman brings you ...

the winners of the STOS competition ...

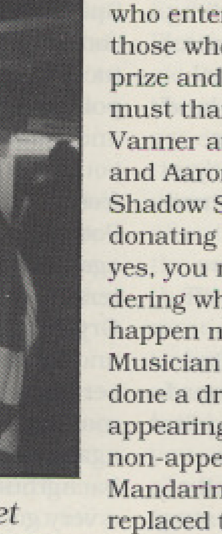
another review of SKYSTRIKE + plus ...

a great colour pallette routine

Well what an issue we have this month, only one program but it is probably the most versatile listing we have published!!! But before all of that here is the news (and reviews!).

THE WINNERS

The STOS competition which we launched a while ago is now well and truly over. The winners should all have received the prizes by now (in fact they should have dropped through the door just in time for Christmas). Of course what everybody wants to know is who won and what games they wrote. Well I'm not going to tell you!!! Ha, no only kidding. The overall winner is Fraser Newham from Glasgow who wrote an infuriatingly addictive version of Hunchback. Second prize went to Lode Runner by Colin Cooper which is a very accurate version of the old 8-bit game and third prize went to Charles Briscoe-Smith who wrote a STOS version of Miner 2049er (it was slightly slow but could easily pass for the original!). My thanks must go to everybody who entered, especially those who didn't win a prize and of course I must thank Richard Vanner at Mandarin and Aaron Fothergill at Shadow Software for donating the prizes. Oh yes, you may be wondering what is going to happen now that STOS Musician seems to have done a dramatic disappearing (or rather non-appearing) act, Mandarin have kindly replaced the prize with the complete set of Fun School 3 packages (Under 5s, 5-7s and Over 7s).





Chris Payne from Mandarin, Francois Lionet (right), author of STOS, and Peter Hickman at the Computer Shopper Show (Peter Hickman is behind the camera!)

AMIGA SOUND QUALITY!

Things are looking up for STOS, remember I told you about Francois Lionet writing an extension which incorporated all of the AMOS music commands in STOS? It works! In fact not only does it work but it sounds nearly as good as the Amiga!! Basically the extension allows you to play AMOS music banks, or you can convert Amiga Soundtracker modules. It includes loads of new commands including VU METER which allows you to read the volume of a sound channel (all FOUR of them!) and even incorporates variable playback rates.

AND GREAT PICCIES!

STOS Vidi looks better and better. If you came along to the Computer Shopper Show on December 9th you could have actually seen me playing with both STOS and AMOS Vidi. The STOS version is the most complete and allows the user to do everything which the original ROMBO software allows you to do and more!! Some of the nice touches include the ability to load and save in PI1, NEO, PC1, IFF, TN0, SQU (STOS squashed piccies), PAC (STOS compacted pictures), and SCREEN$ all of which are automatically handled by a new extension. You can sequence your pictures into short films using a comprehensive "Graphics Tracker" and perhaps more importantly you can drive everything using Icons/Slider bars or keyboard shortcuts!! Although almost finished no firm release date has been set, but I'm sure you may see it appear around February/March.

Talking of the Shopper Show, did you go? Did you meet Francois Lionet? He was there, and strangely very few people wanted to speak to him!! Poor old Francois. Still he is committed to adding a few new features to STOS over the coming months and as usual I will keep you informed.

MORE REVIEWS

Review time. Remember a while back I reviewed a game by Shadow Software which was written in STOS? Now the game (SKYSTRIKE+) has been re-released by Atlantis Software at a budget price of £6.99. The game is based around a flip screen horizontal and vertical shoot-em-up and entails controlling a Mk XIV Spitfire over 56 different missions. Each mission involves completing a certain task such as bombing enemy runways, fending off attacks from enemy planes and even performing stunts such as flying through railway tunnels!!

The game has some marvellous touches which I cannot really reveal without spoiling the game for you all (hint - fly as high as you can to trigger an essential and very humorous sequence of events). The graphics flicker a bit but this is a minor point, basically it's a very nice game and well worth the money. Most of its value lies in the utterly engrossing gameplay although the rousing tunes deserve a mention. For £6.99 you cannot go wrong, rush out, buy it, play it and send me some hints 'cos it gets quite hard after about level 28!! If you really want to try before you buy a PD demo of Skystrike+ is available from the Page 6 PD library on the STOS COLUMN DISK 2.

Another short review comes from a new software company called ARTEMIS DESIGN, I know it sounds like a dodgy after-shave that Auntie Flo always sends you for Christmas but it is in fact an arm of Riverdene PDL. The first release from this company is a budget priced art package which has been written in STOS. The package I received was in the middle of undergoing a few changes, so I had a nice printed manual and disk but no box. I am assured by Alister Craig that by the time you read this all copies of the program will be available in nice boxes.

The disk contains two copies of the program, a compiled version for non-STOS owners and an accessory for everybody else. For £14.99 you get an art package which doesn't have the nice brush manipulation features of Deluxe Paint but does contain lots of other extras like a routine to give access to the 512 colour palette. This routine is put to use providing a Degas Elite type colour selection screen where all 512 colours are displayed for you to click on.

It's quite hard trying to sum up all of the functions available from the art package as it is so comprehensive, all of the usual functions are there including block cut/paste, spray can, shrink/reduce. You can even use standard STOS fonts.

What can I say about this package, it's like that lager ad they keep running, it's good but not that good! For STOS owners who wish to retain the integrated environment of STOS when developing a piece of software the program is perfect. For £14.99 it's an ideal art package for those with a limited budget (it also loads/saves in IFF & PC1 as an added bonus).

The main rival (in terms of price at least) has to be Degas Elite which I am glad to say doesn't fare too well up against ST Paint Master but when compared with a more expensive package like Deluxe Paint you begin to realise that you get what you pay for - a fully featured art package which is just a little lacking in some areas.

```
500 reserve as work 14,1602
510 for LOP=start(14) to start(14)+1600 step 2
511 doke LOP,rnd(1900)
512 next LOP
520 doke start(14)+1600,-1
530 areg(0)=start(14) : dreg(0)=5 : dreg(1)=1 : dreg(7)=2
540 call 15 : wait key : dreg(7)=3 : call 15
```

ORIGINAL FILENAME : STOS_512.MBK
BANK NUMBER : 15
BANK LENGTH : 768

Adrs	Datas								Check
0000	601A	0000	022C	*0016	BE7C	0000	6700	0020	287F8
0024	BE7C	0001	6700	0034	BE7C	0002	6700	0048	24B77
0034	BE7C	0003	6700	00F2	3E3C	FFFF	4E75	48E7	2FC08
0044	80C0	7007	207C	00FF	8240	43FA	01D8	22D8	1FD2C
0054	51C8	FFFC	4CDF	0301	4E75	48E7	80C0	7007	329C7
0064	227C	00FF	8240	41FA	01BC	22D8	51C8	FFFC	25E0D
0074	4CDF	0301	4E75	48E7	80C0	43FA	01A7	0C11	1B9AE
0084	0001	6700	009E	12BC	0001	43FA	0196	1280	0D26C
0094	43FA	018F	1281	43FA	0182	2288	41FA	0182	1038A
00A4	10B9	00FF	FA09	41FA	0176	10B9	00FF	FA07	25AF0
00B4	41FA	016D	10B9	00FF	FA13	41FA	00C2	20B9	1B2A7
00C4	0000	0118	41FA	00B2	23C8	0000	0118	4239	0AADD
00D4	00FF	FA1B	0239	00DF	00FF	FA09	0239	00FE	1FC71
00E4	00FF	FA07	41FA	0130	20B9	0000	0120	41FA	1A203
00F4	0092	23C8	0000	0120	0039	0001	00FF	FA07	120BA
0104	0039	0001	00FF	FA13	41FA	0108	20B9	0000	15F07
0114	0070	43FA	00F6	2290	41FA	00C2	23C8	0000	0CE74
0124	0070	4CDF	0301	4E75	48E7	80C0	43FA	00F5	1AD5B
0134	4A11	673E	4211	41FA	00E8	13D0	00FF	FA09	2451A
0144	41FA	00DC	13D0	00FF	FA07	41FA	00D3	13D0	1A849
0154	00FF	FA13	41FA	0028	23D0	0000	0118	41FA	1A416
0164	00B6	23D0	0000	0120	41FA	00A8	23D0	0000	08C18
0174	0070	4CDF	0301	4E75	46FC	2500	4EF9	00E0	15A9A
0184	3CA0	4239	00FF	FA1B	48E7	80C0	303C	001E	273F4
0194	51C8	FFFE	41FA	0078	2250	207C	00FF	8240	25A43
01A4	20D9	20D9	20D9	20D9	20D9	20D9	20D9	20D9	106C8
01B4	0C51	FFFF	6706	41FA	0056	2089	41FA	0064	2188D
01C4	13D0	00FF	FA21	13FC	0008	00FF	FA1B	4CDF	26AED
01D4	0301	08B9	0000	00FF	FA0F	4E73	48E7	80C0	21EE2
01E4	43FA	0038	2051	43FA	0026	2288	4239	00FF	10E63
01F4	FA1B	41FA	002D	13D0	00FF	FA21	13FC	0008	25F36
0204	00FF	FA1B	4CDF	0301	4EF9	00E0	0802	000E	1A2E3
0214	F500	00E0	0802	000E	FD86	000E	F500	1E1E	30EA2
0224	6401	0500	*00D8	0000	0000	0000	0000	0000	169D9

END OF BANK

LET'S HAVE A PROGRAM

Okay program time. The routine published here has been written by Terry Mancey who also wrote ST PAINT MASTER, it's actually similar to the 512k routine which comes with the art pack-

age but incorporates some more advanced features and is actually smaller!!

To run the routine you must first create a bank from the data in TABLE 1, this data must be typed into the INPDATA.ACB program which comes on your STOS accessories disk, alternatively you can use the enhanced version which comes on the PAGE 6 STOS DISK 1 available from the PAGE 6 PD library. Save this data onto a nice blank disk (just in case something terrible happens!) and then enter PROGRAM 1.

Before I give you a line by line breakdown of the demo let me just give you some information about using the routine (which can be dangerous). The basic idea is to construct a new series of palettes for each screen, each screen can be split into up to 100 palettes each two lines deep. Each palette is made up of 16 colours and each colour value takes up two bytes in memory. So to store a set of 100 colour palettes you would need to reserve a bank 3200 bytes long (16 cols*100 palettes*2 bytes per colour) plus another 2 bytes to store a stop value for the machine code to recognise. For this demo I am going to split the palette once every four lines which means I only need to reserve a bank 1602 bytes long (16cols *50 pals *2 bytes +2).

HOW IT WORKS

LINE 500 Sets up a temporary bank to store our colour palettes.
LINE 510 Starts a loop to fill the bank with colour data
LINE 511 Dokes a random number for each possible colour. Incidentally you can actually go up as far as $FFF for owners of the STE (lots of fabo colours!!).
LINE 512 Loops back
LINE 520 Puts a marker at the end of the palette data for the machine code to recognise that the bank has ended.
LINE 530 This line sets up the routine, you must pass some variables to the machine code for it to function properly.

Areg(0) must always hold the start address of the bank where the palette data is stored.

Dreg(0) tells the routine how often to swap palettes (in screen lines), you must always add 1 to this number. For example if I want to swap the palettes every four lines I must pass five into Dreg(0).

Dreg(1) lets you start the changes to the screen at any line (from 1 to 199).

Dreg(7) is a control register for the routine, is you pass 2 into it and then call the routine it starts, if you pass 3 into Dreg(7) the routine stops swapping palettes!

LINES 540 Calls the routine, waits for a key and calls it again in order to stop it.

Well what do you think of that? Neat huh? I do love STOS.

THE STOS CLUB

Right now, before I pop off let me just tell you about the STOS club. If you are interested in receiving a bi-monthly newsletter (which by a sheer coincidence is published in between issues of New Atari User!) then give Aaron Fothergill a ring on 0271-23544, tell him where you found out about the STOS club from and join up!!

SKYSTRIKE+
is available from
ATLANTIS SOFTWARE
28 STATION ROAD
LONDON SE25 5AG

ST PAINT MASTER
is available from
ARTEMIS DESIGN
30A SCHOOL ROAD
TILEHURST
READING
BERKSHIRE RG3 5AN

You can write to me as follows:
PETER HICKMAN
36 CLEVERLEY ESTATE
WORMHOLT ROAD
LONDON
W12 0LX

DRAGONFLIGHT

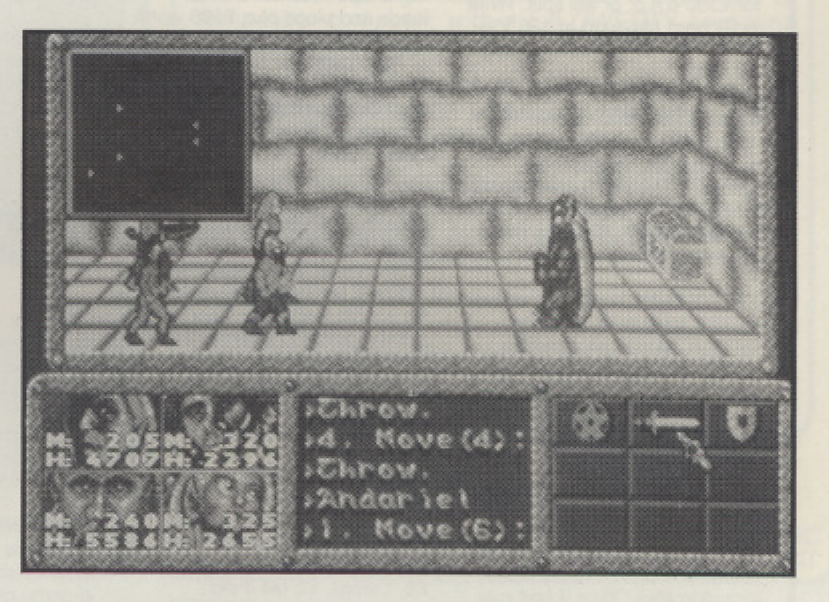
There are four of you, elf, dwarf, mage and fighter. The fate of the world rests on your shoulders, Only YOU can search the dungeons of this strange world to find the magical scrolls which will enable magic to flourish again. And only YOU can discover the fate of the missing Dragons!

You start in the town of Pegana with a little food and gold, a few torches and one small fragment of a map of the world - one of your prime objectives is to find the other eleven pieces so that you can understand various strange geographical references. The map builds up to form a superb full screen display of the world.

The game is completely mouse driven, though you can use the numeric keypad for movement most of the time. In Pegana you will find pubs, blacksmith, grocers, healer, university, town hall and about 25 houses, at about 13 of which someone will answer the door and talk to you. You will also find about a dozen people wandering around the town. Conversations are a little limited - they say what they want and the only options you have are Show and Give. The inhabitants and pubs in the twelve towns will provide all the information you need so that you know what to Show/Give to whom in order to progress.

Near Pegana you will find two dungeons to explore if you feel ready for a fight! But first you might visit the nearby town of Drombul (NE) to buy some cheap torches or look for secret passages in the Tunnel (N) to give yourself a good start to the game (the password for the Tunnel IS in Pegana!).

You flip between action icons and movement icons with the right button; the main part of the screen is used for a number of different functions: overhead view of wilderness or town; view ahead of dungeon corridors; side view of fights and dungeon rooms; text during conversations; menus and lists for buying, accessing your inventory, preparing spells; etc. - all done with lots of lovely graphics.



The Dungeons are enormous - there are over NINETY levels to explore in the ten main dungeons! Fortunately there are no wandering monsters - you only have to fight in Dungeon Rooms - as some of the Dungeons are VERY difficult to map. There are 3-D mazes of small rooms and staircases, teleport mazes, pits, and Riddle-Tongues which will not let you pass until you answer their questions!

You will also have to fight your way through hundreds of rooms inhabited by various Undead, Trolls, Gnolls, Energy Balls, Balrons, seemingly invulnerable Statues, and Crystal Guardians which instantly obliterate those who enter unprepared! The fights are done with a side view of your guys on the left and up to four baddies on the right. You use your movement points to move, hack, fire or cast prepared spells - a small window in the corner showing a bird's eye view helps you aim - then your actions and the enemies are shown in animation on the main screen - quite impressive when you have a barrage of magic weapons and spells flying about, and each of the Monsters dies graphically in a different way!

Assuming you survive your first couple of dungeons you should end up with enough gold and treasure to improve your weapons and armour, and some scrolls and potions so that you can start practising magic! Experience points allow you to build your initial 50 hit points up into the thousands!

Once you have got to grips with the mechanics of the game and learnt how to survive, you will find an enormous world to explore and a number of subquests to complete in order to get all the power and artefacts which you will need to survive the last couple of dungeons and gain the means to find the secret of the missing dragons!

The Germans who put this together obviously had a lot of fun doing so - you can meet lots of interesting people in the towns such as Thomas Covenant and Iolo (the bard from Ultima!) plus statues to people like Tolkien and Gary Gygax!

Dragonflight is not perfect - once you get pretty powerful most of the fights can be won very easily, but you have to keep fighting to explore the dungeons; once you have seen the fight animation a couple of hundred times you start wishing you could speed it up a little; and the people wandering the towns are a bit hard to find sometimes. But if you accept these limitations you will get excellent value for your money as it will take you many, many hours to discover all the secrets of this excellent fantasy and reach the super animated sequence which completes the game. Note one BUG - Raisin Schnaps = Liqueur of Raisins - you'll need to know this!

- ***SIGHT & SOUND*** *- Great variety of graphics; atmospheric music which is due to be released on CD!*
- ***GAMEPLAY*** *- A little tedious in places, but mainly an addictive, enormous, icon based D&D with lots of depth*
- ***VERDICT*** *- Excellent value for money, especially if you get the limited edition with the free teashirt and badge!*

Title:	**DRAGONFLIGHT**
Publisher:	**Thalion**
Price:	**£24.99**
Reviewer:	**John Sweeney**

contact ... contact ... contact ... contact

FOR SALE

ATARI SYSTEM: 800XL computer, 1050 disk drive, 1010 data recorder, 1029 printer with spare ribbon and lead, software worth £150, books including Your Atari Computer. Will sell for £300 o.n.o. or will split. Write to Richard Maynard at 126 Vincent Road, Sharrow, Sheffield, S7 1BX

XL SYSTEM: 800XL plus 16k 400, 1010 data recorder, mags and manuals, 60 cassette games, 11 Roms, 2 joysticks, all for £220. Call Fraser after 6 pm on 0506 52897. Buyer collects or pays postage

XE SYSTEM: Atari XE computer with tape deck, joystick, lightgun, games on cartridge and cassette, Atari User magazines. Excellent condition, boxed with instructions. Contact 19 Pattison Street, Delves, Walsall WS5 4PD

130XE SYSTEM: 130XE 128k computer (boxed), 810 disk drive with Happy enhancement, cassette recorder, many disks including Mini Office II and cassettes (games and serious), joysticks, Atari mags, manuals and books. Printer interface and Sek. printer. Also available some unfinished PCBs for magazine projects. £199 buys the lot. Call Brighton (0273) 566390 evenings or weekends.

XE SYSTEM: 65XE, XC12 cassette, competition Pro 5000 and Cheatah 125+ joysticks, all leads and manuals, boxed as new. Games listing book, nearly 30 magazines, approx. £370 worth of software. No splits. Will sell for £125 o.n.o. Buyer collects or pays postage! Phone Craig Stevens on Lincoln (0522) 560507 (after 6pm)

EPSON SHEET FEEDER: Sheet feeder for Epson LQ850, boxed as new, £20. Books - ST Disk Drives Inside and Out, £5, ST Tips and Tricks, £3. Phone Mike on 0332 810785 (Derby)

XE SYSTEM: 65XE with data recorder, £300 worth of games plus magazines. £250 o.n.o. Buyer must collect. Contact Glenn 081 804 7020 after 7pm

130XE SYSTEM: 130XE, XF551 disk drive, XC12 data recorder, touch tablet, joystick, serious software, lots of used and unused disks, £150. Mr. Atkinson. Tel. 0604 718702

XL SYSTEM: 800XL, 1050 drive, 1010 recorder, 1029 printer and all leads, 5 joysticks, Touch Tablet, Trakball, some ROMs, cassettes, over 150 disks full of every kind of software inc. Mini Office II. COMPLETE set of Atari Users, Mapping The Atari and many more micro books. Worth £520, will sell for £300 o.n.o. Write to Rob Howe, 5/34, Maple Bank, Church Road, Edgbaston, Birmingham B15 3TE

800XL: Atari 800XL with 1010 data recorder, power pack, 2 joysticks, 20 Atari Users mags, more than 10 games. Price £100. Mr. V. Ikonomou, 39 Amberley Road, Bush Hill Park, Enfield, Middx. EN1 2QY. Tel. 081 360 8301

800XL: 800XL computer with 1010 tape recorder with all leads and plugs plus £180 worth of software plus various issues of Atari User and New Atari User. £100 the lot o.n.o.. Phone East Grinstead (0342) 321360 and ask for Edward Harwood (after 4 pm.)

ALIEN VOICE BOX: Atari 8-bit speech synthesiser plus software. Very rare in the UK. Works on all disk based 8-bit systems but needs AC adaptor for XL/XE, £40. Also 1027 LQ printer (doesn't require interface unit), £60 and Touch Tablet with Artist cartridge, £20. All excellent condition. Tel. 0273 779595 (Brighton)

PRINTSHOP: Printshop with PAGE 6 Utilities, £20, P:R: Connection, £20, AtariWriter Plus, £15, American Country Road Race, £2, Jewels of Darkness, £8, Livings, £2 (all disks). Phone Steve 0243 373 695

GAMES/BACK ISSUES: 120 8-bit games (tape/disk) for sale £50 or will split. Also back issues of Old/New Atari User and manuals. Tel. Paul on Crawley (0293) 514632 evenings

XE SYSTEM: 130XE, two 1050 drives, US Doubler and Archiver, data recorder, full set of Atari User mags and tapes, boxed games, Tari-Talk, SpartaDos, Mini Office, PAGE 6 mags, Graphix AT printer interface, 200 full disks. Ring George 0274 570756

MAGAZINES: Atari User May 1985 - April 1988, Analog Feb. 1984, Monitor issue 8 -15, Page 6 issues 17 and 21 - 32. £1 for each magazine up to 5 magazines, £0.80 per magazine thereafter. Phone Andy Furnell on 0522 690825

XE SYSTEM: 65XE, 1050 disk drive, tape recorder, 1020 printer plotter, manuals, £300 worth of software inc. Assembler Editor, PL65 language, Zork 1, Mercenary. Magazines, most of Atari User from 1st edition. Phone (0273) 400950

800XL COMPUTER: Needs attention, still boxed with all leads etc. working order. Suit hardware enthusiast - offers. Also Amstrad green monitor - offers. Phone William (evenings) on 0474 332654

XE SYSTEM: 65XE with XC12 data recorder, 1050 disk drive purchased two months ago, over £150 worth of games mostly tapes, 3 disks, blank disks, 2 joysticks and 11 mags. Selling for £225 o.n.o. Tel. 061 707 5017

XE SYSTEM: 130XE, 1050 with Archiver (boxed), many disks, disk notcher, Basic B cartridge. £220 o.n.o. Must sell. Phone 051 648 4926

BOOKS: Mapping The Atari, £8, Your Atari Computer, £2, Pole Position, £4, EMI Soccer cart. £4, TariTalk, £10 or £25 the lot. Phone 051 648 4926

1027 PRINTER: 1027 LQ in excellent condition, complete with leads, ink rollers and Atari Writer disk, £50. Phone 0234 851930 evenings only.

WANTED

DOS 2.0: Wanted, a copy of DOS 2.0 with manual (or photocopy) and a full copy of DOS 2.5 manual (original or photocopy). Will pay all expenses. Paul Smith, 21 Modbury Avenue, Leicester, LE4 2PY. Tel. 0533 356587 (evenings)

STATIONFALL: Infocom adventure for the 8-bit Atari, must be complete with all original game packaging. Reasonable price given. Phone 0506 413773 after 6 pm.

LISTINGS: Could anyone send me photocopies of Blockbreaker (Issue 20), Munchy Madness Screen Designer (Issue 28), Flexible Fingers (Issue 26). Please send to D. J. Townson, Peacehaven, Love Lane, Bickington, Newton Abbot, South Devon TQ12 6JT

SUPERSCRIPT: Can anyone help with a copy of the manual for Superscript? I bought a copy secondhand with no manual but feel I am not using its full potential. Contact Jim on 0343 842283. Thanks

DISK DRIVE POWER PACK: 1050 Disk Drive power pack wanted. Write to Andrew C. Thompson, 135 Hennllys Way, St. Dials, Cwmbran, Gwent NP44 7NF

STATIONFALL: Wanted for 130XE, also Head Over Heels disk, Basil Mouse disk. Reasonable price paid. Tel. 0702 204079 (evenings)

YORKY: Wanted Yorky 256k (or similar) plug-in memory upgrade for 800XL with all RAM chips etc. and preferably with Ramdisk software. Will pay £25-£30. tel. Richard on (0302) 784642

130XE: Atari 130XE wanted with XC12 within reasonable distance of Lincolnshire. Tel. (Boston) 0205 353446

XF551 DRIVE: Wanted, must be in good condition and in running order with leads and manual. Will pay up to £100. Contact Geert Garver, Hemmelserveg 20, 8900 Ieper, B Belgium

ADVENTURES: I'm looking for adventures such as Dungeons and Dragons but on the XL. Ultima IV or something like that. Can anyone help? Write to Arnold Bontsema, Wibenaheerd 366, 9736 nd, Holland

1027 PRINTER: Will pay £50 for a 1027 printer in good condition and full working order. Phone Andy Furnell on 0522 690825

1027 MANUAL: 1027 printer manual or just some operating instructions urgently needed. Will pay for manual plus postage. Write to Susan Pentecost, 30, Ramuz Drive, Westcliff-on-Sea, Essex SS0 9JB

DISK DRIVE: For 800XL, must be in good working order and £50 maximum cost. Phone Colin on 0698 424938 (evenings) or write to 39, Allanshaw Street, Hamilton, Scotland ML3 6NL

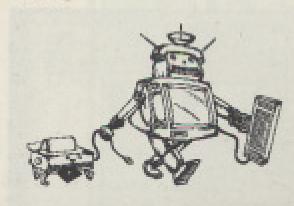
1050 DISK DRIVE: Must be in good condition with cables. Will pay £60 and collect from London area. Phone Steve on 081 569 2634 after 6 pm.

XL SYSTEM: 800XL with 1010 cassette and 20 games, £60. tel. 0773 852273

XL SYSTEM: 800XL, 1050 disk drive, 1010 data recorder, joystick and trackball, 195 games, 90 disks, FS2 and book all boxed, manuals and leads. Also 22 Atari User magazines. £220 will not split. Tel. 0968 76920 5 pm to 10 pm, 10 am to 10 pm weekends ask for David

SPEEDSCRIPT: Can anyone supply a copy of the instruction manual for Speedscript 3.0 by Charles Brannan. Ring Harry on 0787 473136

MAGAZINES: Wanted, PAGE 6 No's 1 - 18, ANTIC Vol. 1 No. 1 to Vol. 2 No. 3, Vol. 3 No. 2 and 5, vol. 4 No 4, 5, 9 and 12, Vol. 5 No. 2, 5 and 6: ATARI MAGAZINE (SAG) Vol. 1 No. 3 to Vol. 4. Bart Pleumeekers, Grevensmolenweg 83, 3800 Sint-Truiden, Belgium. Tel. 011/67 40 78



PENPALS/HELP

PENPALS WANTED: I have a 800XL with a 1050 disk drive with various disks plus some cassettes. If you would like to swap please contact Warren Whiteman, 19 Breadcroft Lane, Barrow-upon-Soar, Loughborough, Leics., LE12 8HW

FREE SOFTWARE!: Now that I have got your attention I am still compiling a Top Ten of games in each of the following categories. Let me know your top three in each one and I'll let you know the National Result. 1. All time best game, 2. All time worst game, 3. Most Addictive, 4. Most Frustrating, 5. Best Shoot-'em-up, 6. Worst Sports Simulation. Contact Richard, 2 Cottingley Heights, Cottingley, Leeds LS11 0JL

HI EVERYBODY!: Rene calling from Holland to any 8-bit user anywhere in Europe. I have a 65XE with 1050 disk drive and XC12 data cassette. I would like to hear from anyone who would like to swap hints, tips and games. All letters answered! Write to Rene Van Mierlo, Kapiteinpulverstraat 2, 5625 CM, Eindhoven, Holland

HELPLINE: Bigger and better, now with newsletter full of tips, cheats and maps. Drop me a line any time. I've loads of tape games at bargain prices plus disks. Contact Dean, 138 Townsfield Road, Westhoughton, Nr. Bolton BL5 2NT. Tel. 840725

POLISH PENPAL: My name is Paul Gontarek and I am 18 years old. I live in small county near Warsaw in Poland. I have computer Atari 65XE with tape recorder XC12. I want find contact with friends which have computer Atari 65XL/XE. Can you help me? I want exchange information and programs on the Atari XL/XE. Paul Gontarek, Ul. Modlinska 33A, 05-110 Jablonna, Poland

PENPALS: Hi! I'm Melanie and I am 12 years old. I own an Atari 800XL and 1010 and 1050. I have lots of games. I like typing in programs and I love programming in Basic. Write to me to swap hints, tips and computing problems. All letters answered, so write NOW! Write to Melanie Jones, 164 Marvels Lane, Grove Park, London SE12 9PJ

CONTACT is FREE of charge and may be used by any genuine Atari enthusiast for contacting other owners. Any notice may be included except those offering software only for sale or exchange or those offering items for sale commercially. The Editor reserves the right to omit any notice received at his discresion.

Send your CONTACT notice to CONTACT, PAGE 6, P.O. Box 54, Stafford, ST16 1DR. Please write your notice on a separate sheet of paper, not as part of a letter.

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Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

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PLEASE SEND INFORMATION ON PORTFOLIO

Mr/Mrs/Ms: .... Initials: .... Surname: ....

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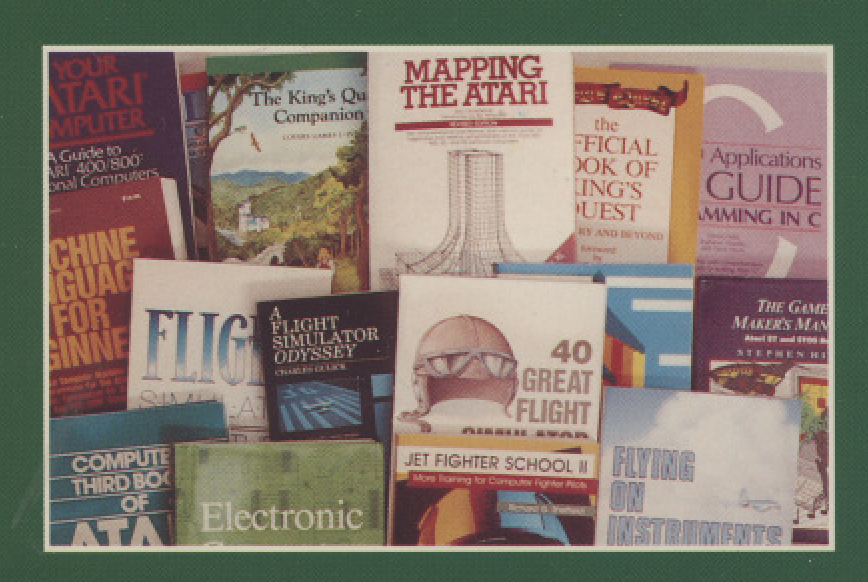


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